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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL ADJUSTMENT ADMINISTRATION

REGIONAL PROBLEMS
IN
AGRICULTURAL ADJUSTMENT

ISSUED MARCH 1935

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PREPARED IN
PROGRAM PLANNING DIVISION

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REGIONAL AND SUB-REGIONAL CLASSIFICATION OF TYPES-OF-FARMING IN THE UNITED STATES

The following differentiation of the Agriculture of the United States is based upon variations in soil, climate and surface features; crop and livestock combinations; relative productivity; markets; relative income by source; and other minor factors. The Map has been designed to present a generalized picture of the nation's agriculture. The 13 regions and 100 sub-regions shown on the face of this map are classified as follows:

1. MIXED FARMING

1-a. Puget Sound, Willamette and Associated Valleys.
1-b. Intermountain Irrigated Valleys.
1-c. Colorado-New Mexico High Plain. 1-d. Finger Lakes.
1-e. Atlantic and Gulf Coast Flatwoods. 1-f. Miscellaneous City Areas.

2. FRUIT AND MIXED FARMING

2-a. Washington-Oregon Irrigated Valleys.
2-b. St. Helena, Santa Cruz, and Santa Clara Valleys.
2-c. Great Valley of California. 2-d. Salinas River Valley.
2-e. Southern California Valleys.
2-f. Sierra Nevada-Coast Range Timberland and Grazing.
2-g. Lower Rio Grande Valley. 2-h. Florida Fruit Region.
2-i. Lake Michigan-Lake Ontario. 2-j. Shenandoah-Cumberland-Albemarle.
2-k. Georgia Peach Area. 2-l. Miscellaneous Berry and Tree Fruit Areas.

3. RANGE LIVESTOCK

3-a. Harney Basin-Blue Mountains. 3-b. Utah-Nevada Basin.
3-c. Rocky Mountains and Associated Basins.
3-d. Northern Great Plains. 3-e. Sandhills of Nebraska.
3-f. Southwestern Woodlands, Grassland and Semi-Deserts.
3-g. Edwards Plateau. 3-h. Range Livestock and Cotton.
3-i. Flint Hills of Kansas.

4. WHEAT AND SMALL GRAINS

4-a. Columbia River Basin—Eastern Portion.
4-b. Columbia River Basin—Western Portion. 4-c. Southeastern Idaho.
4-d. Wheat and Range Livestock. 4-e. Wheat and General Farming.
4-f. Specialized Wheat and Small Grain. 4-g. Wheat and Range Livestock.
4-h. Specialized Wheat Farming. 4-i. Wheat and General Farming.

5. DAIRY

5-a. North Pacific Coast. 5-b. Lake States-Sub-region A.
5-c. Lake States-Sub-region B. 5-d. Lake States-Sub-region C.
5-e. Chicago-Milwaukee Milkshed. 5-f. Detroit-Lansing Milkshed.
5-g. New York-Sub-region A. 5-h. New York-Sub-region B.
5-i. New York-Sub-region C. 5-j. Boston Milkshed.
5-k. Miscellaneous Dairy Areas.

6. CORN BELT

6-a. Western Transition. 6-b. Northern Livestock-Dairy.
6-c. Cash Corn and Oats. 6-d. Cash Corn and Small Grain.
6-e. Central Intensive Feeding. 6-f. Southern Pasture and Feeding.
6-g. Cash Corn and Small Grain.
6-h. General Farming, Dairy and Crop Specialties.
6-i. Livestock and Soft Winter Wheat.

7. GENERAL FARMING

7-a. Ozark-Southeast Kansas-Oklahoma. 7-b. Southern Illinois and Indiana.
7-c. Eastern Ohio and Middle Atlantic States.
7-d. Central Basin of Tennessee. 7-e. Virginia-West Virginia Grazing Regions.
7-f. Tennessee-Shenandoah-Cumberland Limestone Valleys.

8. COTTON BELT

8-a. Southwestern Irrigated Valleys. 8-b. Large-scale Cotton Farming.
8-c. Oklahoma-Texas General Farming. 8-d. Arkansas River Valley and Uplands.
8-e. Black Waxy Prairie of Texas. 8-f. Post-Oak Strip-Upper Coastal Prairie.
8-g. Piney Woods of Northeast Texas.
8-h. Southwestern Arkansas and Northern Louisiana.
8-i. Mississippi-Alabama Clay Hills and Rolling Uplands.
8-j. Southeast Texas-Mississippi Piney Woods-Cotton and Self-sufficing.
8-k. Mississippi and Red River Deltas.
8-l. Mississippi-Tennessee Brown Loam Area.
8-m. Tennessee River and Limestone Valleys. 8-n. Northern Piedmont.
8-o. Southern Piedmont. 8-p. Gulf Coastal Plain—Cotton and Peanuts.
8-q. Eastern Coastal Plain and Sandhills.

9. SELF-SUFFICING

9-a. Southern Appalachian Region. 9-b. Ozark-Ouachita Mountains.

10. SPECIAL CROPS

10-a. Ripe Field Beans. 10-b. Sugar Beets. 10-c. Sugar Cane.
10-d. Potatoes. 10-e. Rice. 10-f. Peanuts.

11. TOBACCO AND GENERAL FARMING

11-a. Burley. 11-b. Flue-cured. 11-c Fire-cured.
11-d. Dark Air-cured. 11-e. Southern Maryland. 11-f. Cigar Types.

12. TRUCK

12-a. Imperial Valley and Winter Garden of Texas.
12-b. Southeastern Truck Regions. 12-c. Baltimore-Philadelphia-New Jersey.

13. NON-AGRICULTURAL

13-a. Cascade Mountains and Associated Coast Ranges.
13-b. Adirondacks and Northern Maine. 13-c. Colorado-Mohave Desert.
13-d. Florida Flatwoods and Everglades.

REGIONALIZED TYPES OF FARMING IN THE UNITED STATES

LEGEND*

MIXED FARMING†
- CITY AREAS
- 1 MOUNTAIN VALLEYS AND TENCH LAKE AREAS
- HIGH PLAINS AND FLATWOOD AREAS
- 2 FRUIT AND MIXED FARMING
- 3 RANGE LIVESTOCK
- 4 WHEAT AND SMALL GRAINS
- 5 DAIRY
- 6 CORN BELT
- 7 GENERAL FARMING
- 8 COTTON BELT
- 9 SELF-SUFFICING
- 10 SPECIAL CROPS
- 11 TOBACCO AND GENERAL FARMING
- 12 TRUCK
- 13 NON-AGRICULTURAL

* DENSITY OF COLOR DISTINCTIONS ROUGHLY INDICATES THE PRODUCTIVITY PER UNIT OF FARM LAND WITHIN REGIONS.

† COLOR UNDERLYING MIXED FARMING AREAS INDICATES THE MOST GENERAL TYPE OF FARMING.

UNITED STATES DEPARTMENT OF AGRICULTURE

WILLIAMS & HEINTZ CO., WASH. D. C.

PLANNING DIVISION—AGRICULTURAL ADJUSTMENT ADMINISTRATION

THE FARMERS WILL KNOW BEST

The time is approaching when farmers of the United States will make some key decisions regarding their production problems. The most critical phases of the surplus emergency which confronted them in 1932 and early in 1933 and of the drought emergency of 1934 seem to be receding. Farmers now have an opportunity to survey the situation, take stock of what they have done, and make up their minds what they would like to do in the future.

Many farmers have expressed the thought that adjustment methods should be more flexible and adapted more closely to the needs and problems of the individual farm. Since farms in one region differ greatly from those in other regions, the suggestion has been made that one way of approaching this problem is through consideration of the special characteristics of the various agricultural regions and areas of the United States. Farmers themselves know best what their own production problems are. They will undoubtedly want to study and discuss the whole problem as it is outlined in the pages of this pamphlet. They can then map out a course which will represent their collective will.

H A Wallace

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REGIONAL PROBLEMS IN AGRICULTURAL ADJUSTMENT

CHAPTER 1

FITTING ADJUSTMENT PLANS TO THE FARM

Many a farmer, in speaking of the agricultural adjustment program in the last 2 years, has said: "Yes, I like the program in general. I think it is what agriculture needs. But——" Then he has mentioned something about the program with which he was dissatisfied.

Probably such criticism was inevitable, under the circumstances. Desperate situations require drastic remedies; and when the Agricultural Adjustment Act was passed in the spring of 1933, farmers of the United States were facing bankruptcy. With foreign markets blocked and domestic buying power low, huge supplies of the main farm products had piled up in storage. Prices of these products had slipped down and down. Thousands of farmers could not pay their taxes or their debts, and they were unable to buy many of the things essential to the operation of a farm as a going business. They were barely able to keep their families sheltered, fed, and clothed.

ACTION WAS THE FIRST NEED IN THE EMERGENCY

Something had to be done, and it was done. Under the Agricultural Adjustment Act, programs for adjusting the production of wheat, cotton, corn, hogs, and tobacco were launched. More than 3,000,000 farmers, cooperating in these programs, received benefit payments to compensate them for their cooperation and to put them on at least an even footing with any of their neighbors who did not cooperate. A million other farmers worked through marketing agreements and licenses affecting other farm commodities. With production brought more nearly into line with demand, prices of farm products began to rise and agriculture began to recover from its acute distress.

FLAT CUT UNSUITED TO CONTINUING ADJUSTMENT

The drive to get results for agriculture as a whole necessarily meant that the effect of the programs on indiviual farmers and in-

dividual farm operations could not always be carefully considered. The production-adjustment contracts, as a matter of convenience in the emergency, were based on past production; and farmers were asked to make a flat percentage cut from this historic base. But the flat percentage adjustments had the tendency to provide the highest base for those farmers who had continued to produce at or near the maximum, while farmers who had responded more promptly to reduced demand and lower prices had smaller historic bases. The point made here is that the first phase of agricultural adjustment was bound to leave many farmers dissatisfied with details of the program, even though they approved the principle of the program as a whole.

FACTORS TO BE WEIGHED

While the drought cut down the huge price-depressing surpluses, it did not change the fundamental factors which brought about those surpluses. There are still from 10,000,000 to 25,000,000 acres of average crop land which are not needed in the production of the principal staples. The exact amount of land not needed in the principal staples depends on the status of domestic and foreign markets. Foreign markets, because of trade barriers and the continued effort of European countries to be self-sufficient in food production, remain largely closed. Purchasing power of American consumers appears to be gradually increasing, but with population increasing at a declining rate, there appears to be little prospect of sufficient increase in home demand in the near future to make up for the foreign markets which have been lost. The 1935 programs call for keeping around 25,000,000 acres out of production of the staple crops.

The conclusion appears inescapable that if farmers are not to sink back into the same slough in which they found themselves in 1932 and early 1933, they must continue to balance their production with effective demand.

ESTIMATING THE DESIRED NATIONAL PRODUCTION

From the standpoint of agriculture and the Nation as a whole, the question is: How much of the various commodities should be produced in the Nation, so as to supply demands at home and abroad, and give farmers fair exchange value for their products?

In getting the answers to this question, the interests of consumers should not be neglected. While the first mandate of Congress in the Agricultural Adjustment Act was to restore farm products to fair exchange value as rapidly as could be done without undue disturbance of price relationships, the second mandate was to protect consumers.

Once the desired national production of the various commodities has been estimated, the question becomes: How can approximately these amounts be produced and still leave the individual farmer free to plan his farm operations with the special characteristics of his farm in mind? And how can injustices among farmers and among farming areas be avoided?

Cooperative adjustment of production, if carefully and wisely planned, should not put agriculture in a straight-jacket. There should be real encouragement of sound rotation practice and of production on a scale best suited to the most efficient use of machinery, tillage methods, and balanced farming operations.

THE COMMODITY APPROACH

The first approach to production adjustment was entirely on a commodity basis. For example, an adjustment contract was made available to all growers of wheat, regardless of what variety they produced or in what part of the country they lived, regardless of whether they specialized in wheat growing or simply raised wheat as part of their crop rotation. The same was true with respect to cotton and corn and hogs.

Now, the problem is to adapt the commodity programs so that they fit the special conditions of the various regions and localities. Farmers have suggested that if the problem were approached on a regional basis, which because of the geographical distribution of agriculture would approximate commodity lines, decentralized planning would be possible.

PRODUCTION BY REGIONS

To this end a study of the kinds of farming practiced in the various regions of the United States has been made. For the purpose of this study, the country has been divided into 12 major agricultural regions, among which are the Corn and Cotton Belts, and the Wheat, Range Livestock, Dairy, and other regions. The problems in one region are distinct from those in another and have to be considered separately.

In any one region, there are important differences in the farming practiced in different parts. The subregions, in turn, may be divided into still smaller units, which differ from each other.

After the national volume of production desired for each commodity has been determined, two additional steps would be necessary to adapt the program to the various regions and areas:

First, determination of the proportion of this national total for each commodity that it is desirable to produce in each of the agricultural regions or areas.

For example, farmers in the Corn Belt have been asking: What is the proportion of the Nation's total corn production that will give us the best returns year after year and still be in harmony with the best interests of corn and other feed-grain producers as a group? Or, to put it in another way, how much of our crop land shall we plant to corn in order to make the best use of our resources? Similar questions have been asked by farmers in the Cotton Belt and other regions. Taken together, such inquiries raise broad questions of national interest.

The second step would be to allocate the production of the various commodities in each region or area on an equitable basis among farmers in that region or area.

PAST PRODUCTION NOT THE ONLY GUIDE

Past production will serve as a guide in making such allocations, but there are other factors to be considered. It is perhaps easier to say what is wanted rather than to find concrete expression for what is needed.

Nearly everyone will agree that conflict between adjustment quotas and the principles of good land use, balanced farming, and sound farm management should be avoided. There are some areas where past trends in acreage and production and recent changes in farming practices are such as to indicate that the production of certain commodities should become increasingly important. In other areas, especially where soil erosion is widespread and is a serious problem, the acreage in the intensive cash crops might be reduced and farming shifted to a more extensive basis.

There are still other areas where the soil is so poor that even the best systems of farming, under the best economic conditions that can be anticipated, will not yield income sufficient to provide a decent living for the farmers. Obviously, in such areas past production is an unsatisfactory guide for making adjustments.

BEST UTILIZATION OF FARMER'S RESOURCES

The aim would be to promote and encourage the best utilization of the individual farmer's resources, conserve soil fertility, and provide the maximum farm income over a period of years, keeping in mind at all times the national and regional goals, as well as export outlets.

In the present adjustment programs, some significant moves have already been made toward overcoming the injustices that are inherent in any method of basing quotas on records of past production. As long ago as 1933, when the adjustment program was getting under

way, some of the first tobacco contracts allowed the grower a wide latitude in selecting the type of adjustment best suited to the conditions of his farm. In certain wheat counties in the West, in 1934, the local committees took into consideration the best farm-management practice in allocating quotas among the various cooperating farmers.

If, for example, 65 percent was agreed upon as the best proportion of farm land to be put in wheat in their section, those farmers whose wheat acreage had been a great deal higher than 65 percent reduced their percentage by a fair amount. Farmers who had only a small proportion of their farm in wheat thus might make only minor adjustments in order to bring the total wheat acreage of all cooperating farmers into line with the county quotas. In this way, the adjustment program could be carried forward without interfering too much with good farm-management practice by the individual farmers.

Similarly a degree of flexibility has been introduced into the 1935 corn-hog and cotton programs, which provide that cooperating farmers may plant varying proportions of the base-period acreage. Thus, every farmer who participates, instead of being required to make a flat percentage adjustment in his production, may choose, within a considerable range, that adjustment which in his judgment is best suited to the conditions of his particular farm.

CONSERVING SOIL AND RETIRING SUBMARGINAL FARM LAND

Soil conservation is an essential part of any continuing agricultural adjustment program, and erosion control is essential to soil conservation. Although the United States is apparently faced with an excess acreage of crop land for the few years just ahead, it will eventually need all of its crop land, and every effort should be made to check soil erosion and promote soil improvement in connection with the agricultural adjustment program.

So far, erosion control and soil improvement have been encouraged by the Agricultural Adjustment Administration by allowing land taken out of production of basic crops to be used for soil-improving and erosion-preventing crops wherever desired. An additional step would be to retire from production of basic crops land most subject to erosion, in lieu of average crop land. The Soil Erosion Service, Department of the Interior, has begun a demonstration program of erosion control, and additional information about erosion control and rainfall absorption is being accumulated as experimental and demonstrational work advances.

Erosion is so widespread that special attention should be given to it and to the closely associated fertility problem in any long-time adjustment program.

Also, regional planning of agricultural production might well be coordinated with the program for Government acquisition of submarginal land. Land too poor for farming might gradually be returned to forest or grazing or set aside for recreational uses.

NO CUT-AND-DRIED PLANS

Adapting the agricultural program to a regional basis will call for a great deal of study and thoughtful consideration by farmers and by those who serve agriculture in college experiment stations and extension services. No cut-and-dried plans can be handed down from any central authority. The most valuable information and advice will come from farmers themselves. Their first-hand knowledge will prove vitally important in determining what combinations and sequences of crops would provide for the most efficient operation of the farm and at the same time prove most practicable and effective in conserving and building up fertility and in minimizing erosion.

The facts contained in this publication merely indicate something of the nature of the problem to be faced. They may be helpful in further study of the problem and in stimulating discussion.

Whatever modifications of the present adjustment programs may eventually be adopted will likely result from an evolutionary process rather than from hasty action.

It will be important to make certain that any proposed changes have the support of the great majority of the farmers affected. Continuation of the referendum method already used in connection with the corn-hog, cotton, and tobacco programs will assure farmers that their wishes will determine what finally is done.

Farmers have discovered in the last 2 years what they can accomplish by cooperative effort. Now they have an opportunity to build on the experience of the past, consolidating the gains already made and putting agriculture on a permanently sound basis.

CHAPTER 2

VOLUME OF NATIONAL PRODUCTION DESIRED [1]

A rational analysis of the situation confronting American farmers will lead to two questions:

What total volume of production would be required to give consumers an adequate annual supply of food and clothing and at the same time assure farmers a reasonable income for their work and the use of their land and equipment?

What production would result if each farmer followed that system of farming which gave the most efficient use of labor and equipment and best promoted soil conservation?

Obviously, agriculture as a whole may be expected to produce enough food and raw materials—for example, cotton and wool for clothing and for industrial uses—to supply domestic consumers with such of the agricultural elements necessary for an adequate and rising standard of living. Consumers in turn may be expected to pay, and usually are ready to pay, a reasonable price for what is produced. In addition, farmers want to produce such commodities for export as can be disposed of through this outlet. But farmers should not be expected to expend their labor and to mine their soil in order to produce so much as to force prices downward to a subsistence level for even the most efficient and to result in the accumulation of great quantities of surplus stocks such as existed in 1932 and 1933.

What, then, is the volume of agricultural production normally required for domestic consumption and for export? Such a question can best be answered by a consideration of normal or average requirements as measured by the recorded consumption and exports of the recent past and by a careful consideration of such changes as may be expected to develop between the present and 1940.

HOW MUCH FOOD DOES AMERICA CONSUME?

The average per capita consumption of foodstuffs, whether measured in terms of pounds, calories, or acreages required, remained remarkably stable from 1919–20 through 1932–33. The per capita

[1] The scientific work which is the basis of this and following chapters was done largely in the Production Planning Section, under the supervision of F. F. Elliott.

consumption of all foodstuffs, measured in terms of weights sold in the retail market, averaged about 1,422 pounds for the period 1920–24, about 1,474 pounds for the period 1925–29, and 1,454 pounds for the period 1930–33. (See table 1.)[2] Although total pounds of food used is not a good measure of consumption nor of changes in consumption, the generalization based upon the total would seem to be sound; for when foodstuffs are broken down into 12 related groups, the per capita consumption of each group is almost as stable as the consumption of all groups combined.

TABLE 1.—*Average per capita consumption of principal agricultural products, 1920–33* [1]

Commodity or group	Average per capita consumption per year by periods			
	1920–24	1925–29	1930–33	1920–33
	Pounds	*Pounds*	*Pounds*	*Pounds*
Cereal products	228	229	221	226
All potatoes	172	162	154	163
Sugar and sirup	110	116	109	112
Dairy products:				
Milk and cream [2]	315	335	349	332
Manufactured	43	47	45	45
Fruits:				
Fresh [3]	173	186	176	179
Dried	6	6	6	6
Vegetables [4]	142	157	158	152
Lean meats and fish	135	132	130	133
Eggs	23	26	27	25
Beans, peas, nuts	14	15	16	15
Fats (except butter)	45	46	45	45
Beverages, spices, and chocolate [5]	16	17	18	17
Total food	1,422	1,474	1,454	1,450
Wool	5	5	4	5
Cotton	24	26	20	23
Tobacco [6]	8	9	8	8
Flaxseed	16	20	12	16

[1] Consumption of foodstuffs in terms of weight sold in retail market.
[2] Whole milk and cream in terms of whole milk.
[3] Fresh and canned fruit in terms of fresh fruit; watermelons and cantaloupes included.
[4] Consumption of fresh and canned vegetables per urban inhabitant in terms of fresh vegetables. Data for production of farm gardens not available.
[5] Includes coffee, tea, spices, cocoa, and chocolate.
[6] Consumption per person 15 years old or over.

The period 1920–24 was characterized by a gradual recovery from the decreased consumption, occasioned by the World War, of certain classes of food, especially sugar, dairy products, and meat; and the period 1930–33 by a slight downward trend associated in part with the depression. The average per capita consumption for 1925–29, however, represents a level of consumption associated with as prosperous a period as America has ever known, and would seem to set

[2] The data in table 1 are derived from a study of consumption and foreign trade as related to agricultural production which is being prepared by the Production Planning Section. As indicated, consumption of foodstuffs is in terms of weights sold in the retail market instead of in the more usual terms of carcass weight or disappearance from the farm. The waste allowances average about 5 percent for pork and 15 percent for beef from the carcass weight, and about 15 percent for fruits and 5 to 30 percent for vegetables from the farm weight.

a reasonable standard by which requirements for the immediate future may be measured.

ACREAGE REQUIRED FOR FOOD

About 285,000,000 to 290,000,000 acres of harvested crop land of average quality would be required to supply our present population of about 126,500,000 people with the same per capita consumption of food as prevailed in 1925–29, assuming we continue to import such commodities as sugar and coffee. The average consumption of food or the acres required for production will, of course, tend to change with changes in the average level of consumer incomes, education, and advertising with respect to food consumption, and the technique of agricultural production, and also as population increases. For the immediate future, however, it is doubtful that the average per capita requirements for food will be materially increased beyond the level prevailing in 1925–29.

As far as incomes are concerned, the changes which chiefly affect the consumption of agricultural products are the changes between income groups in a particular period rather than year-to-year changes in the total national income. That is, families receiving relatively high incomes consume more food per capita than families receiving relatively low incomes within the same period. It might be expected that a general increase in the incomes of families at the lower levels would increase the average consumption of food among these families—provided the incomes of all families and the prices of food and all other products were not also increased in the same proportion. But even if the relative incomes of all families at the lower levels were increased, it should be remembered that a large portion of the increased income would be used for industrial goods and other purposes rather than for food.

EFFECT OF THE AMERICAN DIET ON ACREAGE REQUIREMENTS

Education and advertising with respect to food consumption cannot be expected to increase total per capita consumption materially. Not only is the physical desire of the average person for food definitely limited, but as already indicated the total budget for food is also often limited. As a result, all foods may be considered to be competing with each other, and the increased per capita consumption of any particular food is usually obtained through the reduced consumption of some other food.

About 280,000,000 to 285,000,000 acres of average harvested crop land, for example, would be required to supply our present population with what home economists of the Department of Agriculture

have termed an adequate diet at moderate cost.[3] Such a diet would provide for a much greater per capita supply of vitamins and minerals than the actual American dietary in 1925–29, but almost exactly the same acreage of crop land would be required. As compared with 1925–29, however, a general shift to the adequate diet at moderate cost would require a very considerable increase in the average per capita expenditures for food and would result in rather pronounced changes in our requirements for meat, cereals, dairy products, and fruits and vegetables. Such changes, although they would not affect the total acreage required, would require a radical reorganization of our income structure, of our food-consuming habits, and of our agricultural system.

Almost every change in agricultural technique since the settlement of America has tended to increase rather than to decrease the net production of food per acre of crop land. Since about 1915 especially, the steady decrease in the number of horses and mules in cities and on farms has been increasing the net volume of agricultural production per acre of crop land worked. The acreage data given in this chapter are based on an assumed requirement of 20 acres of harvested crop land per horse or mule on hand January 1. Actually, the number of workstock is expected to continue to decrease into 1936–38, and the assumed ratio of workstock to crop land is somewhat too high even at present.

Changes in population, of course, may be expected to affect food consumption directly. However, an increase of only about 2.5 percent in population can be expected between the present and 1940. A declining birth rate and restricted immigration have slowed down the rate of population growth which could once be counted on to result in a steadily increasing demand for food.

ACREAGE REQUIRED FOR NONFOOD PRODUCTS

The average per capita consumption of the nonfood products, of which cotton, wool, tobacco, and flax are especially important, is much more variable than the average consumption of food. As indicated in table 1, the depression in 1930–33 resulted in a decline of 20 percent in the average per capita consumption of both wool and cotton, of 10 percent in tobacco, and of 40 percent in flaxseed as compared with consumption in 1925–29. To supply our present population with nonfood products at the 1930–33 level would require about 20,000,000 and at the 1925–29 level about 25,000,000 harvested acres of average crop land, assuming that such products as rubber and carpet wool are imported.

[3] See: H. K. Stiebeling and M. M. Ward, Diets at Four Levels of Nutritive Content and Cost, Circular 296, U. S. Department of Agriculture, November 1933

THE EXPORT SITUATION

As far as acreage requirements for exports are concerned, the exports of agricultural commodities have steadily declined since the War and at best only a gradual upswing can be expected. (See table 2.) Exports of wheat declined from a high of 370,000,000 bushels in the fiscal year 1920–21 to 37,000,000 bushels in 1933–34, and exports in 1934–35 will be even smaller than in 1933–34. Our exports of pork and lard have declined from almost 2,000,000,000 pounds in 1923–24 to 700,000,000 pounds in 1933–34, and exports are expected to be even smaller in both 1934–35 and 1935–36. Our exports of cotton and tobacco have been maintained at a more stable level, although exports of tobacco dropped from 600,000,000 pounds in 1929–30 to 400,000,000 pounds in 1932–33. Altogether, the acreage at average yields required to supply our exports declined from 84,000,000 acres in 1920–21 to 39,000,000 acres in 1933–34.

TABLE 2.—*Exports of principal agricultural commodities, and acreage equivalent, 1919–20 to 1933–34*

Crop year	Exports, year beginning July 1							Acreage equivalent of exports [5]
	Wheat including flour	Grains other than wheat [1]	Cotton lint [2]	Tobacco, unmanufactured	Pork, excluding lard [3]	Lard, pure	Beef [4]	
	Million bushels	*1,000 tons*	*1,000 bales*	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*1,000 acres*
Av. 1910–14	107	1,746	8,840	392	439	474	222	
1919–20	222	3,369	7,035	648	1,175	587	368	69,891
1920–21	369	4,481	5,570	507	776	746	204	83,839
1921–22	283	7,290	6,592	463	704	812	222	77,663
1922–23	225	5,350	5,205	454	842	953	195	66,645
1923–24	160	2,028	5,784	598	919	1,015	185	55,228
1924–25	261	2,935	8,239	431	607	793	190	73,137
1925–26	108	2,696	8,110	537	477	695	152	55,815
1926–27	219	2,180	11,281	516	337	676	152	75,049
1927–28	206	2,674	7,890	490	330	716	107	64,325
1928–29	164	3,433	8,520	566	331	781	101	65,633
1929–30	153	1,249	7,096	600	351	787	102	51,163
1930–31	131	546	7,048	591	206	586	98	46,805
1931–32	136	417	8,989	432	137	543	79	53,658
1932–33	41	651	8,647	400	126	560	74	43,733
1933–34 [6]	37	394	8,366	473	159	547	79	38,805
Average 1925–29	192	2,784	8,808	508	417	732	140	66,792
Average 1933–34	39	522	8,506	436	143	554	76	41,269

[1] Barley including flour and malt, rye including flour, oats including meal, corn including meal, year beginning July 1; and exports and shipments of wet process corn products, calendar years following.
[2] Bales of 500 pounds gross.
[3] Canned, fresh, salted or pickled pork, bacon and hams, Wiltshire and Cumberland sides, neutral lard and lard oil.
[4] Canned, cured, and fresh beef, oleo oil, oleo stock, oleomargarine, tallow, and stearin from animal fats.
[5] Acreage equivalent at average yields of crop year exports and shipments to noncontiguous territories combined with calendar year exports and shipments of livestock products, including an allowance for workstock.
[6] Preliminary.

Concerted efforts are being made to regain the foreign market. Reciprocal trade treaties have been concluded with Cuba and Brazil and similar treaties are under negotiation with Belgium

and a half-dozen South and Central American countries. In addition, a First and a Second Import-Export Bank have been organized, and the export movement of wheat from the Pacific Northwest was supported in 1933–34 by the Agricultural Adjustment Administration through the North Pacific Emergency Export Association. But foreign trade is so hampered by tariffs, quotas, embargoes, quarantines, subsidies, and exchange restrictions, that a gradual increase in the exports of agricultural products is all that can be expected.

EXCESS ACREAGE STILL A PROBLEM

If, as this analysis indicates, the acreage needed to supply domestic requirements and exports of agricultural products is not materially increased in the years just ahead, it cannot be expected to exceed 340,000,000 to 350,000,000 average acres of harvested crop land. That is, 30,000,000 to 40,000,000 acres will be required for exports, and, for domestic consumption, 285,000,000 to 290,000,000 acres will be required for food products together with 20,000,000 to 25,000,000 acres for nonfood products.

The actual acreage of crop land harvested averaged 360,000,000 to 365,000,000 acres for the period 1928 through 1932. *As a result, this country is faced with an excess acreage equivalent to 10,000,000 to 25,000,000 harvested acres of crop land, at average yields, provided the land is left idle. A shift of 20,000,000 to 40,000,000 acres would be required if intensive crops were replaced by hay and pasture and no land left idle. If the adjustment is effected by retiring submarginal crop land, an acreage equally as large or larger would be required.*

An increasing population and an improvement in the foreign situation are expected to result in a gradual increase in the acreage of crop land required. But a continuing agricultural-adjustment program is needed until the eventual solution is achieved, and it is in such a program that farmers and others are especially interested.

CHAPTER 3

REGIONAL DISTRIBUTION OF AGRICULTURAL PRODUCTION

The determination of the most desirable total volume of production is a national problem. It necessarily has to take into account the present requirements for the Nation as a whole, and prospective domestic and foreign demand. Knowing what the national production is or probably will be for each product provides a basis for determining the probable price and the income that can be expected under given conditions of business activity and consumer purchasing power. The price received by farmers, however, will not be constant throughout the country.

These regional differences in price for a particular commodity, as well as varying relationships between prices of the several commodities, will result in different responses in production in various parts of the country. Such differences greatly complicate the problem of determining the probable production that can be expected from a given national adjustment. To arrive at a satisfactory answer to this problem as well as to measure the effect of the adjustment upon individual farms, it is necessary to attack the problem from a regional standpoint and take these differences into account.

The ultimate test of an adjustment program is its effect upon the individual farms that make up the agriculture of the Nation. Each cooperating farmer has the problem of planning his business so that he will conform with the program and at the same time make satisfactory use of his resources. In other words, his job is to make the provisions of the program a part of the business he operates.

THE NEED TO CONSIDER REGIONAL DIFFERENCES

Each farm business presents numerous problems, some of which are similar in character while others differ widely. Variations in soil conditions, in climatic factors, in distance to market, in the crops grown, in the livestock produced, and in many other things, account for the wide differences in the problems of farmers in various parts of the country. But in a particular region, where there is a fairly high degree of uniformity in physical conditions and in types of farming, the differences between individual farms are not so great. The problems of farmers in the Corn Belt differ widely from those of

farmers in the Cotton Belt, the Wheat Belt, the Range Country, and the Dairy region; but the problems of the bulk of the farmers within any one of these regions are very similar in character and lend themselves to common treatment.

Any program designed to accomplish the purposes of the Agricultural Adjustment Act should recognize these differences so that farmers may bring about adjustments that fit, as closely as possible, the conditions and problems they face on their own farms. If this goal is to be achieved, attention should be given to regional and individual differences, and adjustments should be based upon detailed information for each region and even for each farm. If such information is obtained and developed by regions, where conditions are fairly uniform and where the problems of the bulk of the farmers are similar in character, a realistic approach to the adjustment problem will have been achieved.

An analysis of the agriculture of the United States shows that it may be divided geographically into distinct patterns or types of farming, and furthermore that there is a large number of regions and areas within which there is a high degree of uniformity, both in physical conditions and in farming types.[4]

The number of such areas that may be differentiated will obviously be determined by the degree of refinement desired. In the map, (frontispiece) the agriculture of the country has been divided into 12 major agricultural regions and into 100 subregions. Certain of these regions, such as the Corn Belt of the Middle West, the Cotton Belt of the South, the Wheat and Small Grain regions in the Great Plains, the Range Livestock region in the Mountain and Great Basin States, the Dairy region of the Lake and Northeastern States, are concentrated in clearly defined and contiguous geographic centers; others, such as the Fruit and Mixed Farming, Truck, and Special Crops regions, represent several scattered, clearly defined local type of farming areas. When combined, these comprise a group of areas that have problems essentially similar in character.

ENVIRONMENT DETERMINES THE TYPE OF FARMING

The prevailing geographic distribution of agricultural production in the United States is the result, on the one hand, of broad physical differences in soil, climate, and surface conditions, and on the other, of such general economic differences as location, price, and cost factors, urban development, transportation facilities, freight-rate

[4] See, for example: F. F. Elliott, Types of Farming in the United States, Bureau of the Census, U. S. Department of Commerce, 1933. Much of the discussion in this chapter is drawn from this monograph.

structures, and the like. An analysis of these various factors discloses why American agriculture is so varied, and at the same time why certain types of farming tend to be concentrated in certain geographic centers.

The physical factors of soil, climate, and topography, making up as they do the physical environment, necessarily have a profound influence upon types of farming. On the one hand, they determine the absolute limits of crop production, and on the other, through relative yields, they influence to a considerable degree the proportion in which the various crops are grown.

Before agriculture can be practiced with assurance of success in any locality, several conditions must be met. The land must not be too hilly or too stony to prevent cultivation; the rainfall must be sufficient to grow the crop, the growing season long enough to mature it, and the soil of a suitable kind and fertility to produce it at not too great a cost. Each of these factors has had its influence in shaping the agriculture of the United States, although the effect has not been uniform by any means. In certain areas topography is the limiting factor, in others soil, and in others moisture and temperature. When the effects of these purely physical factors are combined with economic influences, it is possible to ascertain pretty clearly why particular types of farming have become localized in certain geographic areas.

The following brief analysis of the most important conditions and forces shaping agriculture in the major type of farming regions should be sufficient to indicate why American agriculture is distributed geographically as it is, and why the problems of farmers in one region differ so greatly from those of farmers in another region.

THE WHY OF THE CORN BELT

The factors that have made the Midwest important as the principal meat-producing region of the country are both physical and economic in character. This general territory is the great Corn Belt of the United States. Throughout the region the land is level, with deep, warm, black soils, rich in lime, nitrogen, and organic material. These soils are remarkably fertile and particularly adapted to the production of corn. The seasonal distribution of rainfall and temperature is also ideal for the production of corn which grows most rapidly toward the end of the growing period. At this time, high day temperatures and relatively warm nights are very important, as is sufficient rainfall.

Although corn comprises by far the largest proportion of the crops grown in the Corn Belt, it is not grown to the exclusion of other

crops. Oat acreage is next in relative importance and hay is third, followed by wheat. The growth and cultural needs of the corn crop require extremely heavy labor demands during the summer months. If corn is the only crop grown in the cropping system, this means that in other seasons of the year neither man nor horse labor is fully occupied. In order to get around this and to supplement their income, farmers in the Corn Belt grow oats and wheat. The oat crop requires labor mainly in the seasons of the year when it is not occupied with the corn crop. Wheat fits in in a similar way. It is seeded in the fall, after the corn cultivation is over, and before the corn-harvesting period begins. Furthermore, both oats and wheat serve as excellent nurse crops for getting seedings of hay and pasture crops established.

Such a cropping system as this obviously produces a large amount of feed grains and roughage. Inasmuch as corn is a fat-producing feed, the livestock must be of a type to utilize this feed. Hogs, beef cattle, and sheep are, of course, the primary meat-producing animals, and it is these classes of livestock that are found in the Corn Belt. The region, therefore, has become the principal meat-producing region.

In traveling north from the center of the Corn Belt, corn loses a part of the comparative advantage it has over other crops in the region, and is replaced in part by oats, barley, and hay crops. This results in a shift in emphasis from meat production to dairying, which predominates in the Lake States. It is only upon consideration of conditions in the territory adjacent to the main Corn Belt and in other parts of the country, and how they differ from those found within the region, that it is possible to appreciate most forcibly the reason why the agriculture of the Corn Belt has developed as it has.

THE GENERAL FARMING REGIONS

In the territory between the Cotton Belt in the South and the Corn Belt and Dairy regions in the North there is practiced a type of farming in which no one particular enterprise is dominant. In this general region the conditions of climate and soil are such as to favor the prosecution of a large number of enterprises, no one of which has a special advantage over others. Corn, wheat, hay, and to a lesser extent oats are grown. Much of the land is by necessity kept in pasture. This means adherence to livestock for utilization of the pasture and roughage, and for maintenance of fertility. Hogs, beef cattle, and farm flocks of sheep are found on the majority of farms, and a few cows are kept to utilize family labor and to produce butterfat. Poultry and poultry products are also an important source of income.

General farms of this kind are always likely to be found in the transition areas between regions of dominant types of farming. The important enterprises in one region usually begin to lose their advantage over other enterprises as the fringe of that region is approached. As their advantage decreases, the advantage of competing enterprises increases, with the result that a point is reached at which there is established a type of farming which partakes of the characteristics of both of the contiguous regions.

WHAT MAKES THE COTTON BELT

South of the Corn Belt and General Farming region is the important Cotton Belt of the South. The factors which have been mainly responsible for its geographic location are physical. Cotton is a subtropical crop and requires fairly high temperatures, increasing during the growing season. The northern boundary of the Cotton Belt is rather sharply limited by temperature. It follows roughly the line of approximately 200 days free from frost. While cotton will grow north of this line if it escapes the spring frosts, the frosts in the fall usually will destroy so many unpicked bolls that the returns from the crop are greatly reduced. The comparative advantage which cotton has over other crops in the region is greatly reduced, therefore, on the fringes of the region, and is lost altogether when the crop is pushed north into territory of less than 200 days of frost-free season.

The western limit of the region (disregarding irrigated cotton) is determined largely by rainfall. It follows roughly the line of 20 to 23 inches of annual rainfall. The southern boundary likewise is determined in general by rainfall. Very little cotton is grown along either the Atlantic or the Gulf coasts. This is due in part to the high rainfall and in part to the low marshy nature of the country. Along the southern edge of the Atlantic and Gulf coasts, the rainfall amounts to 60 inches or more a year and is generally regarded as too heavy for cotton production. Excessive rainfall causes rank vegetative growth, which takes place at the expense of fruiting. It also may be associated with greater weevil damage.

Soil is not so limiting a factor as climate. Various kinds of soil are found in the Cotton Belt. Cotton will produce a crop on almost any of them, provided the land is well drained. Yields, however, may differ rather widely. Yields of cotton on the upland clay soils are usually low, unless considerable fertilizer is used. Rich clay soils commonly produce good vegetative growth, but the plant does not fruit in proportion. Some bottom lands likewise may produce excessive vegetative growth unless conditions are very favorable. In general, the cotton plant does best on medium gravelly or

loam soils, provided they are well drained. The wide range in adaptation of the crop from the standpoint of soils indicates that cotton can be grown on a large variety of soils found in the Cotton Belt. In fact, because of this, the area in cotton could be extended a great deal if demand justified it.

EFFECT OF ECONOMIC FACTORS IN THE COTTON BELT

In determining the distribution of the crop within the Cotton Belt, and the reasons for its being grown instead of other crops, economic factors also play a part. A number of crops are physically adapted to the region, yet farmers continue to keep the major portion of the farm area in cotton. This is to be explained only on the basis of the returns they can obtain from cotton as compared with the returns from other enterprises that might be substituted.

We have just seen that the Corn Belt of the Midwest has a similar advantage in growing corn. Such main crop areas generally produce their special products more economically than can other regions. It is advantageous for them to continue to grow the crops for which they hold a production advantage and exchange these for the products of other regions, which, in turn, have advantages in their particular kind of production.

The advantage that cotton has over other crops in the South is due in part to the restricted range of adaptability of the cotton crop in the United States, and to the limited regions in the world where optimum conditions for growing the crop are found. It is also due in part to labor conditions in the South. Cotton requires a great deal of hand labor. The more cheaply this labor can be obtained, other things being equal, the more economically the crop can be produced, and thus the greater the opportunity of making it a profitable undertaking. In the South there is a dense negro population. From colonial times this population has been engaged in the production of cotton; the people know the crop and its growing habits and methods of culture. Local land-owners have found it profitable to develop a system of cotton farming which utilizes this cheap labor supply. That this labor supply has been a factor in contributing to the development of cotton in the South cannot be doubted.

Cotton does not get first choice of the land, however, in all areas in the South. In eastern North Carolina and South Carolina and in southeastern Georgia it is replaced, in part or wholly, by flue-cured tobacco. This type of tobacco seems to be of the best texture and quality when grown on the light sandy soils of the region. On such land, through proper fertilization, it is possible to control the quality of the crop to a considerable extent. The question whether cotton

or tobacco gets first choice of the land is determined again by the relative returns from the two crops. These fluctuate from year to year. Since flue-cured tobacco is grown more successfully only on the sandy soils, and cotton can be grown on either the sandy or the clay soils, in most years tobacco probably gets first choice of the sandy soils.

THE WHEAT REGIONS

To the north and west of the Corn Belt is found the important Hard Spring Wheat region, and to the southwest, the Hard Winter Wheat region. Wheat has a much wider climatic range than has either corn or cotton, but nevertheless it is not successfully grown in areas which have an annual rainfall much below 15 inches; in fact, the more important wheat-producing centers receive from 20 to 30 inches of rain a year. Excessive rainfall and high temperatures during the growing period result in an overdevelopment of straw at the expense of the grain. These conditions likewise tend to encourage the development of fungus diseases and rust, to which the plant is quite susceptible. Optimum conditions for the plant include a long, cool, moist growing season, and a sunny, dry period for fruiting and harvesting. In the main, these conditions are found in the important Hard Winter and Hard Spring Wheat regions.

The physical conditions that largely affect these regions and make them important wheat-producing centers, at the same time sharply limit the production of other crops. The low rainfall, accompanied by a relatively high evaporation in the Hard Winter Wheat region, for example, precludes the successful growing of corn. Grain sorghums, being less susceptible to these conditions, replace corn as the principal feed grain in this region. They also supply much of the hay and forage. Other crops are grown in a limited way, but the cropping system is largely a combination of wheat and grain sorghum.

To the north, in the Hard Spring Wheat region, the average length of the growing season for much of the area is from 90 to 120 days. This permits sufficient time to mature the spring-wheat crop, but is not long enough for successful corn growing. Furthermore, the low rainfall, cool nights, and high aridity are not conducive to corn culture.

The broad, level, expansive plains country ideally fits itself for wheat culture and the use of machine methods. The improvement in machine design and development of the combine, the small tractor, and the duck-foot cultivator, in the late 1920's, resulted in pushing the Wheat Belt farther west into the semiarid regions.

Because of these various conditions of production, small-grain farming, including both wheat and flax, and, to a lesser extent, oats,

barley, and rye, has a comparative advantage over other types of farming, and for this reason it has become localized in these general centers.

For much the same reason, wheat is the prevailing type of farming in the Columbia River Basin of western Idaho, eastern Washington, and northern Oregon. This is the most noted dry-land farming region in the United States. The rainfall is low, ranging from 20 inches in the eastern part of the region, known as the Palouse, to as low as 10 inches in the extreme western portion. Because of the low rainfall, the prevailing practice is to alternate wheat with summer fallow. The climatic conditions practically preclude any other practice in the western part of the region. In the east, however, with a higher rainfall, there are more alternatives, but even there wheat continues to be the principal crop.

THE GREAT DAIRY REGIONS

The factors which have made the Northeast the important Dairy region of the United States are of a somewhat different character. This region extends more or less continuously from the New England and Middle Atlantic States on the east, through northeastern Ohio, southeastern Michigan, northern Indiana and Illinois throughout practically the entire State of Wisconsin to the western edge of Minnesota. Apart from the North Pacific coast and localized areas around urban centers, this general region represents the major center of dairy production.

Why, it may be asked, is dairying concentrated in the northeastern part of the United States? In the first place, this is a very important hay and pasture region. The soils are not sufficiently productive to grow the cereal crops in competition with the States farther west, but the cool climate, with its well-distributed rainfall, is very favorable to the production of hay and pasture. Furthermore, the topography does not favor extensive use of machinery. The region, therefore, is at a disadvantage in the production of crops requiring machine methods.

Likewise, the rough and broken terrain has resulted in farms with small acreages in cultivated crops and a large proportion of the farm area in pasture. Beef cattle are at a disadvantage in utilizing this pasture because of the comparatively short pasture season and the consequent long winter feeding period. The large amount of hay, silage, and other surplus roughage supplies the basis for an economical dairy ration. The farmers of the area can import such concentrated feed as is necessary to supplement this cheap home-grown roughage more profitably for the production of dairy products than they can for the production of beef.

Finally, proximity to the important population centers insures a steady demand for dairy products, and the short freight hauls mean that a higher proportion of the consumer price goes to the farmer than would be true in the case of farmers shipping from more remote distances.

The localization of dairying around selected urban centers has developed in order to supply the local demand for dairy products. The prices are sufficiently high to attract enough farmers into dairying to supply the local need. When production is pushed beyond this amount, however, dairying usually is not able to compete with other types of farming more specifically adapted to the locality.

THE WESTERN RANGE REGION

Adjacent to the Wheat and Small Grains region on the west is found the most important grazing region of the United States. The Range Livestock region is located mainly in the Western States, centering particularly in the Mountain and Great Basin States, the western part of the Dakotas, the Sandhills of Nebraska, the Flint Hills of Kansas and Oklahoma and in a large part of western Texas. This is in general a region of low and uncertain rainfall, largely because of the topographic features of the bordering territory and the prevailing direction of the moisture-laden winds. Farming is practically impossible throughout the region, except with irrigation. Alternatives to grazing in this region, consequently, are practically nonexistent. If the area is to be put to agricultural uses at all, it should be left in grass. The choice as between wheat farming and grazing in the territory adjacent to the Wheat Belt is one of relative returns. Wheat is given preference over range livestock only when conditions make of it a more profitable enterprise.

FRUIT AND TRUCK REGIONS

In addition to the major types of farming, which are concentrated in large, clearly defined areas, or regions, there are a number of other types of farming consisting of fruit, vegetables, poultry, mixed farming, and various kinds of crop specialty farming which are usually localized. Although these are unrelated geographically, they can be combined from the standpoint of both character of problems and similarity in farm management.

The location of the important fruit areas in the United States, for example, is probably determined more by physical conditions, particularly climate, than by any other single factor. The climatic requirements may be quite exacting. Extremes in temperatures are likely to result in serious damage. Regions best adapted to fruit production are those where late spring and early fall frosts are not

prevalent. This probably accounts for the location of fruit areas near large bodies of water, such as the Great Lakes. Topography is also quite important because of air drainage. This has had an influence in localizing fruit areas in mountain and hill districts.

In the specialized fruit areas of Florida and California climate has been of primary importance. The citrus fruits, being subtropical, are confined to very limited districts because of temperature restrictions. The dry atmosphere and large amount of sunshine in California permit inexpensive drying of fruits, thereby enabling the fruits to be preserved and shipped economically for long distances. The perishable fruits, marketed fresh, are grown in areas that are either adjacent to market centers or have shipping facilities which permit quick delivery.

Vegetable farming is found chiefly around urban centers to supply local demand, and in Florida and California. Production for shipping is confined largely to favored areas in California, Florida, Texas, and other parts of the South, which supply the demand for early vegetables. The higher prices received for vegetables produced for the early market enable them to be shipped greater distances.

In the areas producing canning crops, the truck crops are likely to be grown as supplementary enterprises, fitting into the systems of farming which are built around other major enterprises. Certain truck crops have a decided preference for particular kinds of soil, and certain of them also have decided seasonal requirements and temperature preferences. These factors, in addition to economic factors, largely determine their location.

SPECIALIZED CROPS ARE WIDESPREAD

Crop specialty farming is found widely scattered over the country, its location usually being determined by some peculiar physical or economic condition in a local area. Potatoes, for example, do best on rather light, deep soils and in a cool, moist climate. The more important potato areas, with a few exceptions, are found north of the Corn Belt, in the Dairy region, and in the irrigated States of the West. Early potatoes are produced largely in the Southeastern, Gulf, and Atlantic coast States. Potatoes do well on the poorer soils of New England and in the States adjacent to the Great Lakes. The nature of the soils, together with the climate, probably governs their distribution in a large measure. In the important western areas moisture is supplied, of course, by irrigation, and the high altitude insures a relatively low temperature during the growing season.

Sugar beets also do best in a cool, moist climate, differing but slightly from potatoes in this respect. They are located, in fact,

in much the same general area. Tame hay likewise does best in a cool, moist climate. It is widely grown, but commercial production is confined largely to the northeastern quarter of the United States and to the irrigated areas of the West. Sugarcane, on the other hand, grows best in a warm climate with high rainfall. Sugarcane for sugar is confined largely to a small group of counties in Louisiana. In this area the soils are heavy and poorly drained, and thus well adapted to the production of sugarcane, but not adapted to the production of cotton, which requires a well-drained soil.

Ripe field beans are produced largely under dry-farming conditions in Colorado, New Mexico, southern Idaho, along the Yellowstone River in Montana, in the Big Horn Basin in Wyoming, and in California. Important areas of bean production are found in western New York and in the Saginaw Valley of Michigan. Beans seem to thrive best under a uniform growing season which has cool nights and ample rainfall. In many areas they are grown in competition with sugar beets.

THE PART-TIME FARMER

Finally, there are the Self-Sufficing and Part-Time Farming regions which are located mainly in the Appalachian Mountain States, in the Ozark and Ouachita Mountain Regions of Missouri and Arkansas, in east Texas, and in other scattered areas. In general, the conditions throughout these regions preclude much agricultural development. Most of the regions are mountainous or semimountainous, and are devoted largely to mining or timber production. Such farming as is possible is done on the more level part of the land. The farms are small and not adapted to the use of machinery. The soils are relatively nonproductive. Under such conditions, it is obvious that it is impossible to develop agriculture to any great extent.

Part-time farming is found in the same general region as is self-sufficing farming and also around urban centers. Both reflect an attempt to increase the family income. Part-time farming around urban centers has been increasing rapidly during the past two decades. Improved transportation facilities in the form of better roads and automobiles and buses have contributed greatly to this development.

REGIONAL DIFFERENCES IMPORTANT

With this general discussion of the factors responsible for the geographic distribution and localization of agriculture in the United States, it must be clear that if a program of adjustment is to be equitable and successfully administered farmers will want it to be

designed in such a way as to meet the problems peculiar to each particular region.

The relative significance of each of these major type-of-farming regions and its contribution to total agricultural production are shown in table 3. The information in this table and the following regional tables have been compiled from the Census of 1930 and relates either to that year or to the crop year 1929. The table has been constructed in such a way as to show, first, total quantities for the United States, and second, the percentage distribution of these quantities by regions, thereby indicating the relative importance of each region to the national aggregate.

A brief analysis of the data indicates how dominant the Corn Belt is in United States agriculture. It is the principal center of production not only of feed grains but also of meat animals. Similarly the Cotton Belt is dominant in cotton, the Wheat Belt in wheat, and the Dairy region in the production of dairy products. Although the relationships among enterprises change somewhat from year to year, on the whole the relative contribution of each region to national production does not vary a great deal from one year to the next.

RELATIONSHIPS AMONG REGIONS

The distribution of American agriculture, then, represents a balance between natural producing advantages on the one hand, and a complicated price and cost structure on the other. Regional specialization is due merely to the attempt of farmers to adapt themselves to the physical and economic environment encountered.

Whenever specialization takes place, either by regions or by tasks, it means that effort and resources are devoted principally to the production of some one thing, or to one or more dominant enterprises. This necessarily results in dependence being placed upon other individuals or regions for the production of additional products for which there is need. This develops a basis for exchange; that is, the farmers in one region, specializing in a particular product for which they have an advantage, find it profitable to exchange this product for the products of farmers in other regions, many of whom also specialize.

As a result, some areas completely lack certain agricultural products. Other areas produce a wider range of commodities, but nevertheless must look elsewhere for part or most of the needed supply. Furthermore, the picture is constantly changing. Each area attempts to produce those products for which it appears to have the greatest advantage, but it may be forced to produce those for which its disadvantage is least. All areas attempt to maintain and protect advantages once gained, and to gain new advantages if the opportunity offers.

TABLE 3.—*Summary of agricultural statistics for the United States by 12 major type-of-farming regions, 1930*

Line	Item	United States total (Thousands except dollars per capita)	Percent of United States total by regions												Line
			Corn Belt	Cotton Belt	Dairy	Wheat and Small Grains	Fruit and Mixed Farming	Mixed Farming	General Farming	Tobacco	Special Crops	Range Livestock	Self-sufficing	Truck	
1	Rural farm population—number	30,158	14	30	11	5	4	6	10	9	3	3	4	1	1
2	Value all farm products—dollars	10,982,036	22	17	13	9	8	7	7	5	5	5	1	1	2
3	Sales per capita—do	319	167	56	116	195	185	114	61	55	150	164	20	174	3
4	Number of farms—number	6,289	14	29	11	5	5	7	10	8	3	3	4	1	4
5	Land in farms—acres	987,579	15	16	8	16	4	6	7	4	3	18	2	1	5
6	Pasture land—total—do	464,292	9	11	7	15	5	6	6	2	2	36	1	(1)	6
7	Crop land—total—do	413,707	24	18	9	20	3	4	7	4	4	6	1	(1)	7
8	Crop land, harvested—do	359,709	26	18	9	20	3	4	6	4	4	5	1	(1)	8
9	Corn acreage—do	97,802	43	17	6	8	1	4	9	5	2	3	2	(1)	9
10	Corn—grain production—bushels	2,132,333	57	12	4	5	1	3	9	4	1	2	2	(1)	10
11	Wheat acreage—acres	62,044	14	3	3	61	2	3	6	1	2	5	(1)	(1)	11
12	Wheat production—bushels	800,075	17	2	4	56	3	4	6	1	3	4	(1)	(1)	12
13	Oats acreage—acres	33,476	54	4	15	11	1	4	5	(1)	3	3	(1)	(1)	13
14	Oats production—bushels	993,019	61	4	15	7	1	4	3	(1)	3	2	(1)	(1)	14
15	All hay acreage—acres	67,879	23	4	22	10	4	8	10	3	5	10	1	(1)	15
16	All hay production—tons	85,296	23	4	23	8	7	9	8	2	6	8	1	1	16
17	Cotton acreage—acres	43,227	-------	84	(1)	1	2	1	1	5	1	4	1	(1)	17
18	Cotton production—bales	14,575	-------	85	(1)	1	3	1	(1)	6	1	2	1	(1)	18
19	Tobacco acreage—acres	1,888	2	1	22	(1)	(1)	4	7	82	(1)	(1)	2	(1)	19
20	Tobacco production—pounds	1,455,108	2	1	3	(1)	(1)	4	9	79	(1)	(1)	2	(1)	20
21	Potato acreage—acres	2,944	11	4	23	6	5	9	8	2	25	3	2	2	21
22	Vegetables for sale—do	2,812	10	11	14	1	15	15	9	4	6	2	1	12	22
23	Fruits and nuts—do	6,086	5	9	10	1	40	10	12	3	4	1	3	2	23
24	Horses and mules—number	17,611	23	22	10	11	3	5	8	5	4	7	2	(1)	24
25	Cattle on farms—do	63,863	22	12	16	10	4	6	8	3	4	13	1	1	25
26	Cows for milk—do	20,499	21	13	25	7	4	8	9	3	4	3	2	1	26
27	Milk produced—gallons	11,052,692	21	9	31	6	5	9	8	3	4	2	1	1	27
28	Whole milk sold—do	4,443,385	10	4	49	1	8	14	7	2	3	1	(1)	1	28
29	Butterfat sold—pounds	1,180,647	35	5	21	12	4	5	7	2	5	3	1	(1)	29
30	Cows for beef—number	7,837	15	12	1	13	5	6	4	1	5	37	(1)	1	30
31	Swine on Apr. 1—do	56,393	54	10	7	6	2	4	7	4	2	3	1	(1)	31
32	Chickens (over 3 months)—do	379,064	28	13	13	6	6	8	13	4	3	3	2	1	32
33	Sheep and lambs—do	56,877	12	3	5	11	6	4	7	3	4	44	(1)	(1)	33

[1] Less than 1 percent.

MUTUAL DEPENDENCE AND COMPETITION

There grows up, as a consequence, a chain of relationships among regions. Some of these relationships are complementary, some are supplementary, while others are conflicting. The several regions are, of course, closely related fom the standpoint of human consumption. The Corn Belt is a central producing region for feed. This feed is shipped to the North and East for utilization in dairy production, to the West to range-cattle men, and to the South to cotton producers. On the other hand, the Corn Belt draws large numbers of stocker and feeder cattle from the western range country. In addition, dairymen and other livestock producers feed large quantities of such derived feeds as wheat bran, linseed meal, and cottonseed cake, which are drawn from important producing and processing centers for these products.

Adjustment in supplies, resulting either from climatic disturbances or conscious effort, tend to upset this normal interregional flow of commodities, thereby bringing the economic interests of farmers in particular regions into apparent conflict with those in other regions. When the production of feed grains in the Corn Belt is large, for example, it is likely to result in low prices and low returns to Corn Belt farmers, but the low prices react to the advantage, temporarily at any rate, of farmers in regions that are normally deficient in feed-grain production.

The Corn Belt farmer, however, in seeking to avoid the effect of low prices upon his income, is likely to expand his production of dairy, poultry, and other products, and in so doing, to increase the competition for dairy and poultry farmers in other regions and to force down the price of their products. On the other hand, high prices of dairy and poultry products in the East that encourage increased production in that region tend to increase competition for the midwestern producer.

In addition to these cases of interregional competition, there is the competition that prevails between cotton production in the eastern Cotton Belt and cotton production in the western Cotton Belt; corn and hog production in the Corn Belt proper as against corn production in the South and West; beef and sheep production in the Corn Belt as against production on the Western Plains and in the Mountain States; wheat production in the Soft Winter, Hard Winter, Hard Spring, and White Wheat areas; potato production in the northern late and southern early or intermediate areas; poultry production in the North Atlantic, Corn Belt, and Pacific coast areas; deciduous-fruit production in the West and in the East; and citrus-fruit production in California, Arizona, Texas, and Florida.

Numerous similar examples could be given to illustrate this play of competition among regions. All of them indicate how closely the farmers of one region are linked to those of other regions. What is done on one farm or in one region is likely to affect all others.

What the farmer desires is a national program for agriculture designed to fit this everchanging picture. It is to his interest that the program take cognizance of these regional differences and interrelationships and that it provide and encourage the adjustments necessary to give production its legitimate comparative advantages. Yet these adjustments should not be hastened to the extent of causing changes that might be more detrimental to particular areas than beneficial to the Nation as a whole.

THE PROBLEM OF ADJUSTMENT IN EACH MAJOR REGION

With this brief sketch of the regional differences in the agriculture of the United States as a background, it is possible to consider the actual adjustment or types of adjustment needed in each of the regions outlined.

The discussion will first develop the general adjustment problem with which the region is most concerned, and then show the relation of the general problem to the type of farming or several types of farming common to the region or to the subregions included in the region. Attention will be centered first upon the Corn Belt and then upon the other regions in succession.

CHAPTER 4

THE CORN BELT AND THE MEAT-ANIMAL FEED-GRAIN PROBLEM

The Corn Belt, stretching across the Midwest, is the agricultural heart of the United States. Approximately 57 percent of the corn for grain, 17 percent of the wheat, 61 percent of the oats, and 10 percent of the vegetables for sale were produced in the Corn Belt in 1929. Approximately 22 percent of the cattle, 54 percent of the swine, 28 percent of the chickens, and 12 percent of the sheep were in the Corn Belt. (See table 4.)

From the standpoint of commercial production, the Corn Belt is even more important than these data would indicate, especially in the production of livestock and feed grain. Approximately 75 percent of the hogs slaughtered under Federal inspection—the source of the bulk of the commercial movement of pork and lard—is usually produced in the Corn Belt and the General Farming region closely associated with it, as outlined on the map, and an additional 10 percent is produced in the Special Farming and transitional subregions mixed with or adjoining the Corn Belt. Almost all of the beef cattle which are fed grain are fed either in the Corn Belt or on corn raised in the Corn Belt. About 21 percent of the whole milk and 35 percent of the butterfat sold were produced by the 21 percent of the dairy cattle which were in the Corn Belt in 1929.

The adjustment problem in the Corn Belt is almost altogether a meat-animal and feed-grain problem, although dairy adjustment is also important. To meet the interests of farmers in the Corn Belt, then, adjustment should be considered against the general background of the meat-animal and feed-grain situation.

THE USES OF CORN

Corn is the chief feed grain. An average or normal crop of feed grains is usually composed of about 2,600,000,000 bushels of corn, about 1,200,000,000 bushels of oats, about 250,000,000 bushels of barley, and about 100,000,000 bushels of grain sorghums, chiefly milo maize and kafir corn. Corn accounts for almost 75 percent of the total weight of feed grains produced. It is about the corn crop that the adjustment problem of the Corn Belt is centered.

According to such data as are available, it is estimated that the utilization of all corn, expressed as grain equivalent, for the 5-year period from 1924–25 to 1928–29 was:

	Million bushels
Commercially processed	125
Hogs on farms	1,100
Beef cattle on farms	175
Dairy cattle on farms	325
Poultry on farms	275
Sheep on farms	25
Horses and mules on farms	375
Other	200

During this period livestock and feed-grain prices were generally stable relative to each other, and the domestic demand for such derived products as milk, eggs, and meat was at a peak level. As a result, the 1925–29 period may well be used as a base for the measurement of the effective requirements for corn in the several years just ahead.

HOW MUCH CORN WILL BE NEEDED?

For the period just ahead it is doubtful whether the requirements for corn for commercial processing will be much changed from the 1925–29 level. An increase in the use of corn in the production of alcoholic beverages and some increase in wet-process grindings will be about offset by the decline in requirements of corn for cornmeal.

The requirements of corn for hog production have decreased. Hog production was increasing during most of the period from 1925 to 1929 while the export movement of pork and lard was declining, and the continuation of this situation into 1932–33 resulted in a continually increasing surplus production which contributed to the drop of over 60 percent in the average price of hogs from the summer of 1929 to the summer of 1933. As a result, the corn-hog program of the Agricultural Adjustment Administration was inaugurated in the fall of 1933.

The drought in 1934, however, resulted in overreduction in the production of hogs, with the result that any estimate of corn requirements for hogs must be based on an increase over the present level of production. Assuming a level about 20 percent below the average level for 1925–29 for the period just ahead, or an average slaughter of about 55,000,000 to 60,000,000 head, a reduction of about 200,000,000 to 225,000,000 bushels in the average requirements of corn for hogs is indicated. Over a longer period, or in case the export market should be revived, hog production should move back toward the old level, and the requirements for corn would be correspondingly increased.

The requirements of corn for beef and dairy cattle, poultry, and sheep may be assumed to continue at the 1925–29 level. Almost all of the corn charged to beef cattle is fed to cattle for market, and it is assumed that the movement of grain-fed cattle can be maintained at the 1925–29 level. Since all milk and eggs are domestically consumed, it is also assumed that the requirements will not be reduced from the 1925–29 level. As wages and employment are increased, the average requirements may be increased.

The number of horses and mules has decreased approximately 20 percent since the mid-point of the 1925–29 period, and a continued decrease until 1936–38 is expected. As a result, the requirements of corn for horses and mules have been reduced about 75,000,000 bushels from the 1925–29 level. The "other" group includes corn for export, for custom-ground cornmeal, for livestock not on farms, and for seed. Requirements for livestock not on farms and for exports have apparently been reduced by 25,000,000 to 50,000,000 bushels as compared with 1925–29.

For the period 1936–38, then, assuming only a gradual revival in export demand, the estimated requirements of corn are about:

	Million bushels
Commercially processed	125
Hogs on farms	875–900
Beef cattle on farms	175
Dairy cattle on farms	325
Poultry on farms	275
Sheep on farms	25
Horses and mules on farms	300
Other	150–175

These estimated requirements are equivalent to 2,250,000,000 to 2,300,000,000 bushels, or 300,000,000 to 350,000,000 bushels below the average for 1925–29.

On the other hand, corn acreage and the potential production of corn continued to increase from 1925–29 through 1932–33. For 1932–33 the acreage of corn harvested was about 105,000,000 acres, which, at an average yield of about 25.5 bushels per acre, might have been expected to yield about 2,675,000,000 bushels, as compared with the 2,600,000,000 bushels which is usually considered a normal crop. If corn requirements and corn production are to be balanced, a downward adjustment of 10 to 15 percent in corn acreage for the Nation as a whole is apparently required.

TABLE 4.—CORN BELT: *Summary of agricultural statistics for eastern and western Corn Belt and for 9 major subregions, 1930*

Line	Item	Corn Belt		Western Corn Belt subregions							Eastern Corn Belt subregions				Line
		Total	Percent of United States total	Total for Western Corn Belt	Western Transition (a)	Northern Livestock-Dairy (b)	Cash Corn and Oats (c)	Cash Corn and Small Grain (d)	Central Intensive Feeding (e)	Southern Pasture and Feeding (f)	Total for Eastern Corn Belt	Cash Corn and Small Grain (g)	General Farming-Dairy and Crop Specialties (h)	Livestock and Soft Winter Wheat (i)	
		Thousands of units, except dollars per capita													
1	Rural farm population—number	4,069	14	2,804	245	475	89	125	1,066	824	1,265	286	492	487	1
2	Value all farm products—dollars	2,456,418	22	1,800,852	153,056	269,839	70,987	86,999	800,458	419,513	655,566	188,216	210,586	256,764	2
3	Sales per capita—do	533	167	576	564	523	732	626	682	447	439	610	373	409	3
4	Number of farms—number	907	14	632	53	97	20	29	232	200	276	59	109	108	4
5	Land in farms—acres	148,482	15	114,832	18,597	16,036	3,208	5,432	39,600	31,959	33,650	9,963	11,774	11,913	5
6	Pasture land—total—do	43,861	9	35,349	7,039	4,610	554	1,065	9,717	12,364	8,512	1,729	3,231	3,552	6
7	Crop land—total—do	96,926	24	73,766	10,858	10,404	2,500	4,168	27,946	17,890	23,160	7,884	7,709	7,567	7
8	Crop land harvested—do	92,250	26	70,603	10,461	10,138	2,480	4,097	27,333	16,094	21,647	7,598	7,056	6,993	8
9	Corn acreage—do	42,386	43	32,925	4,271	3,708	1,326	1,931	13,888	7,801	9,461	3,798	2,513	3,150	9
10	Wheat acreage—do	8,463	14	5,605	1,040	407	6	1,175	814	2,163	2,858	745	882	1,231	10
11	Oats acreage—do	18,181	54	13,470	1,402	2,430	902	487	6,571	1,678	4,711	2,110	1,547	1,054	11
12	Total hay acreage—do	15,389	23	12,310	2,346	2,156	159	379	3,817	3,453	3,079	539	1,508	1,032	12
13	Potato acreage—do	314	11	234	42	44	6	11	91	40	80	8	51	21	13
14	Vegetables for sale—do	286	10	121	3	38	4	2	66	8	165	52	42	71	14
15	Fruits and nuts—do	320	5	204	6	20	4	7	67	100	116	16	53	47	15
16	Cattle on farms—number	13,842	22	11,337	1,321	2,075	314	398	4,431	2,798	2,505	609	953	940	16
17	Cows for milk—do	4,362	21	3,309	307	831	97	116	1,229	729	1,053	225	439	389	17
18	Milk produced—gallons	2,263,219	21	1,698,375	145,418	448,173	52,841	60,192	651,651	340,100	564,844	117,510	243,850	203,484	18
19	Whole milk sold—do	438,231	10	203,439	6,497	78,572	4,972	9,072	71,221	33,105	234,792	27,238	114,962	92,592	19
20	Butterfat sold—pounds	413,474	35	342,738	31,115	96,700	10,921	9,994	131,538	62,470	70,736	17,705	29,338	23,693	20
21	Cows for beef—number	1,189	15	1,097	199	69	18	34	394	383	92	29	22	41	21
22	Swine on Apr. 1—do	30,465	54	24,049	1,900	3,449	808	793	11,906	5,193	6,416	1,405	1,885	3,126	22
23	Chickens (over 3 months)—do	104,830	28	80,214	5,799	12,796	2,948	3,249	30,838	24,584	24,616	5,658	10,425	8,533	23
24	Sheep and lambs—do	6,638	12	4,211	331	496	64	71	1,392	1,857	2,427	255	1,375	797	24
		Per 100 acres farm land, except as indicated in stub													
25	Corn—bushels	822		800	372	667	1,634	919	1,227	482	900	1,392	585	798	25
26	Wheat—do	90		69	71	47	4	344	38	79	159	137	143	194	26
27	Dairy cattle—number	3		3	2	5	3	2	3	2	3	2	4	3	27
28	Beef cattle—do	1		1	1		1	1	1	1					28
29	Swine—do	21		21	10	22	25	15	30	16	19	14	16	26	29
30	Farm land in harvested crop land—percent	62		61	56	63	77	75	69	50	64	76	60	59	30
31	Harvested crop land in feed grains—do	63		64	55	58	87	56	74	54	62	77	53	55	31
32	Plow land in hay and pasture—do	32		33	36	33	18	20	28	44	29	19	36	32	32

REQUIREMENTS FOR OTHER FEED GRAINS ALSO REDUCED

Since oats are not commonly used as hog feed, the requirements for oats have not declined as much as the requirements for corn. Oats, however, are used in large quantities for feed for work stock, and the decline of 20 percent in horse and mule numbers has resulted in a decline of about 10 percent in the demand for oats while the acreage has remained approximately constant.

Grain sorghums and barley are used for about the same purposes as corn, and it may be assumed that the requirements for them have decreased in much the same manner as for corn—except that they are produced in part in subregions where feed-grain production is usually relatively light and where the commercial feeding of hogs is usually not important. As a result, it is estimated that the average requirements for grain sorghums and barley have decreased at least 5 percent. Since 1925–29, the acreage of grain sorghums has remained about constant and the acreage of barley has tended to increase.

A downward adjustment of 5 to 10 percent in the acreage of feed grains other than corn would thus appear desirable in 1936–38.

WHERE SHOULD FEED-GRAIN ADJUSTMENT TAKE PLACE?

Assuming that the analysis just presented is approximately correct, the question may be asked: Where will the downward adjustment in feed-grain production be centered? What will be done with the acreage taken out of feed-grain production? Will livestock control be required if feed-grain production is controlled?

Everything points to the need for centering the adjustment in the Corn Belt. As already indicated, about 57 percent of the corn for grain is produced in the Corn Belt, as outlined in the map. About 75 percent is produced in the Corn Belt and the General Farming, Dairy, Wheat, and Mixed-Farming subregions which are either adjoining or mixed with the Corn Belt. Corn for grain is not an important crop in the West or in the Pennsylvania-New York-New England Dairy region. Although about 15 percent of the corn crop is usually accounted for in the Cotton Belt, almost all of the Southern crop is used for feed for workstock or for the production of meat and milk consumed at home or sold locally; and, as will be evident later in the discussion on the Cotton Belt, it would seem that about the present acreage of corn should be maintained in the South.

All livestock producers are interested in the use of the acreage which may be taken out of feed-grain production. A reduction of 10 percent in feed-grain production, centered in the Corn Belt, where the yield of corn is about 20 percent above the average for the

Nation, would require the removal of approximately 13,500,000 acres from feed-grain production. Such an acreage might be used: (1) For soil-improving crops and erosion control, or fallowed as was originally planned in connection with the 1934 corn-hog program; (2) for any purpose other than the production of corn as was provided for in the corn-hog program for 1935; or (3) for soil-improving crops, erosion control, fallow, or the production of hay and pasture with the exception of oats, alfalfa, and soybeans (except as a soil-improving crop).

The second alternative was adopted for 1935, it should be noted, as a result of the drought in 1934. It was believed that the production of oats and barley for summer harvest should be permitted in view of the almost certain shortage of corn in the summer of 1935, and that the use of oats should be allowed in order that pasture seedings might be properly started on the land where the stand had been killed by the drought.

EFFECTS OF FEED-GRAIN ADJUSTMENT ON LIVESTOCK

Whether the control of feed-grain production will also obtain the desired control of livestock production is an exceptionally important question. As far as hogs are concerned, such analyses as are available show that hog production is usually responsive to the supplies of corn and to the corn-hog price ratio, and that a reduction in corn production over any reasonable period may well be expected to give a corresponding control over hog production. The effect of a feed-grain program on dairy production and the feeding and production of beef cattle and sheep cannot be so clearly defined. On the whole, however, it is certain that excess supplies of corn are very favorable to the increased feeding of dairy cattle and of beef cattle, especially when prices of dairy products and beef cattle are at a reasonable level. Although sheep consume only a small portion of the corn crop, excess supplies and low prices of corn should also encourage an increase in the feeding of sheep.

The results of a feed-grain program would of course depend in part upon the livestock situation at the time feed-grain control was put into effect. A straight feed-grain adjustment program in 1933 and 1934 when livestock numbers were at a peak, for example, would have squeezed livestock producers and forced liquidation. But with the changed situation brought about by the combined corn-hog program and the drought, the squeezing effect of such a program has been eliminated. The real problem at present is to allow for gradually increasing livestock production on the one hand, and to guard against overexpansion on the other. The conclusion is that a feed-grain program would almost directly control the production of hogs

and that it would be a strengthening rather than a weakening factor as far as the dairy, beef cattle, and poultry markets are concerned.

THE CORN BELT IS NOT ALL ALIKE

So far the general situation has been considered with respect to meat animals and feed grains, and the adjustments needed for the Corn Belt as a whole. Although the problem of maintaining a balance between feed grains and livestock applies more or less generally throughout the Corn Belt, it does not apply with equal weight to all parts of the region. For this reason it is not practical to apply a flat over-all adjustment to the entire Corn Belt and assume that it will meet the situations peculiar to particular subregions within it. In addition, farmers in the eastern and southern subregions are also intersted in the wheat problem. Soft winter-wheat production centers in these regions, and hard winter wheat is an important crop in southern Nebraska. Although the Corn Belt is probably more homogeneous than any comparable area of equal size in any other part of the country, there is by no means complete uniformity. Conditions of production, combinations of enterprises, size of farms, location with respect to transportation routes, markets, yields, and practices differ widely.

Because of these differences, the Corn Belt can be divided into a number of clearly defined subregions. Thus, starting on the west, there is first what may be termed the western transition subregion (6–A), occupying the territory immediately east of the Sandhills of Nebraska and extending north into southeastern South Dakota. This region is not strictly a part of the Corn Belt in that the proportion of the land farmed, the rainfall, and the productivity are considerably lower than in other parts of the region.

The farming practiced, however, partakes more of the characteristics of Corn Belt agriculture than of those of the agriculture to the west or north, and for that reason this area was included as a part of the Corn Belt.

The agriculture, in fact, is characterized by the increasing importance of enterprises common to the Corn Belt, and by the decline of enterprises common in the Range Livestock areas to the west. Total crop acreage increased about 25 percent in the 20-year period prior to 1929, and the percentage of the crop area in corn and oats increased from 40 percent to 60 percent in the same period. The agriculture of the area is less stable and the problems of adjustment, therefore, differ somewhat from those in the more established portions of the Corn Belt.

Bordering this territory on the east, and extending eastward through Nebraska, Iowa, Illinois, Indiana, and Ohio, is the Inten-

sive Feed Grain, Livestock Feeding area (subregions 6–E and 6–I). This is the Corn Belt proper, comprising the type of farming characterized by the production of feed grains and livestock, and livestock feeding. From this subregion comes the bulk of the hogs and corn-fed beef. Beef-cattle feeding centers in northeastern Nebraska, northwestern Iowa, and western Illinois. In Ohio and Indiana and parts of Illinois, in the eastern part of this subregion, the farms are smaller and soft winter wheat becomes an important enterprise, fitting into the corn, oats, and clover cropping system so characteristic of the western Corn Belt.

OTHER SUBREGIONS OF THE CORN BELT

Still another clearly defined type of farming is found in the cash-grain subregions in northwestern Iowa (6–C), southeastern Nebraska (6–D) and east central Illinois (6–G). A corn and oats rotation distinguishes the first, corn and wheat with some oats the second, and corn and oats with some wheat, particularly in the southwest portion, the third. In the Illinois and Iowa areas, corn and oats comprise from three-fourths to seven-eighths of the cropped area; hay and pasture are minor, but soybeans are becoming of increasing importance in the Illinois area. Considerable numbers of meat animals as well as some dairy products are produced in southeastern Nebraska. Income from livestock in east-central Illinois, however, is of minor significance compared to the income from cash corn and oats.

Centering in southern Iowa, northern Missouri, and northeastern Kansas is a fourth distinct farming region (6–F). In this region the emphasis on livestock production shifts from feeding to a greater use of pasture. In 1929 pasture comprised 44 percent of the plow land in this area.[5] The importance of grains in the cropping system has tended to decline as the grains are being replaced by hay. Throughout the subregion the problems of maintaining fertility and controlling erosion are of great significance.

A fifth subregion (6–B) is the Northern Livestock-Dairy area centering in northeastern Iowa, northern Illinois, and adjacent territory in Wisconsin and Minnesota. Dairying is the most important livestock enterprise in this subregion, with hogs second. Feed grains and hay in the main comprise the cropping system. Barley is grown along with oats and corn. More corn is grown for silage and less for grain. Both whole milk and butterfat dairying is practiced.

The sixth and last important subregion is located in northern Indiana and Ohio (6–H). In this subregion general farming, dairy-

[5] The term "plow land" is used to designate harvested crop land and plowable pasture combined.

ing, and crop specialty farming are followed The area is less fertile, more poorly drained, and less suited to corn production than the area to the south. Oats are almost equal to corn in the acreage occupied. Hay is an important crop and is becoming more important; wheat also is grown. Crop specialties, such as sugar beets, onions, and mint, are grown in localized areas. Dairy cattle are the predominant type of livestock.

From this brief sketch of the conditions and farming systems found in different parts of the Corn Belt, it is apparent that the problems of adjustment differ from one subregion to another. Farmers in each subregion know that they have special problems in addition to those of the Corn Belt as a whole, and they will want these to be considered and properly evaluated in developing a broad adjustment program.

THE GENERAL FARMING REGIONS

The adjustment problem with which the several General Farming regions and subregions are faced is closely related to the general adjustment problem in the Corn Belt. That is, to the extent that they produce feed grains and livestock, farmers in the General Farming regions are interested in adjusting feed-grain acreage and production in relation to the livestock situation. In addition, however, they are interested in the wheat and tobacco situations and in the general problem of self-sufficing farming and the treatment of submarginal land.

The general region under consideration is centered in southern Pennsylvania, Ohio, Indiana, Illinois, and Missouri, and in the limestone valleys of Virginia and Tennessee. The general character of the types of farming followed is indicated by the data in table 5. Approximately 9 percent of the corn for grain, 6 percent of the wheat, 3 percent of the oats, 8 percent of the hay, and 9 percent of the tobacco produced in the United States, and 7 percent of the whole milk and butterfat sold, came from the General Farming regions in 1929. In addition, about 4 percent of the beef cattle, 7 percent of the swine, and 13 percent of the chickens are included in the same general region. The situations in the different subregions, however, differ considerably.

TABLE 5.—GENERAL FARMING: *Summary of agricultural statistics by 2 major regions and 6 major subregions, 1930*

Line	Item	Total for all General Farming regions	Percent of United States total	General Farming-Soft Winter Wheat subregians				General Farming-Limestone Valleys and West Virginia Grazing region				Line
				Total	Ozark, Southeast Kansas, Oklahoma (a)	Southern Illinois and Indiana (b)	Eastern Ohio and Middle Atlantic States (c)	Total	Central Basin of Tennessee (d)	Virginia-West Virginia Grazing (e)	Tennessee, Shenandoah, Cumberland, Limestone Valleys (f)	
		Thousands of units, except dollars per capita										
1	Rural farm population—number	3,144	10	1,867	574	593	700	1,277	158	396	723	1
2	Value all farm products—dollars	786,218	7	511,222	140,115	159,654	211,453	274,996	36,315	70,747	167,934	2
3	Sales per capita—do	195	61	219	192	217	243	160	178	119	179	3
4	Number of farms—number	645	10	403	125	131	147	242	34	75	133	4
5	Land in farms—acres	68,401	7	46,990	17,267	14,967	14,756	21,411	2,823	7,924	10,664	5
6	Pasture land—total—do	26,903	6	17,283	7,231	4,337	5,715	9,620	1,228	4,859	3,533	6
7	Crop land—total—do	28,788	7	21,772	7,210	8,488	6,074	7,016	1,200	1,663	4,153	7
8	Crop land harvested—do	23,381	6	17,416	5,827	6,456	5,133	5,965	981	1,490	3,494	8
9	Corn acreage—do	8,315	9	6,230	2,312	2,517	1,401	2,085	525	379	1,181	9
10	Wheat acreage—do	3,703	6	2,886	833	1,141	912	817	68	91	658	10
11	Oats acreage—do	1,581	5	1,337	439	433	465	244	10	70	164	11
12	Total hay acreage—do	6,843	10	4,905	1,587	1,674	1,644	1,938	248	698	992	12
13	Vegetables for sale—do	254	9	200	22	50	128	54	6	8	40	13
14	Fruits and nuts—do	712	12	435	86	145	204	277	13	107	157	14
15	Cattle on farms—number	4,914	8	3,265	1,287	891	1,087	1,649	247	553	849	15
16	Cows for milk—do	1,858	9	1,256	389	388	479	602	100	172	330	16
17	Milk produced—gallons	884,488	8	599,301	166,665	182,607	250,029	285,187	42,825	76,180	166,182	17
18	Whole milk sold—do	320,495	7	204,115	24,279	66,393	113,443	116,380	18,020	17,165	81,195	18
19	Butterfat sold—pounds	77,659	7	66,594	24,359	22,410	19,825	11,065	3,705	3,296	4,064	19
20	Cows for beef—number	280	4	219	151	44	24	61	8	30	23	20
21	Swine on April 1—do	3,931	7	3,007	1,036	1,172	799	924	249	201	474	21
22	Chickens (over 3 months)—do	47,204	13	34,181	10,103	12,000	12,078	13,023	1,914	3,011	8,098	22
23	Sheep and lambs—do	4,201	7	2,266	440	424	1,402	1,935	336	1,120	479	23
		Per 100 acres farm land, except as indicated in stub										
24	Corn—bushels	273		285	214	377	274	248	423	132	288	24
25	Wheat—do	68		75	45	79	107	54	17	14	93	25
26	Dairy cattle—number	3		3	2	3	3	3	4	2	3	26
27	Beef cattle—do			1	1							27
28	Swine—do	6		6	6	8	5	4	9	3	4	28
29	Farm land in harvested crop land—percent	34		37	34	43	35	28	35	19	33	29
30	Harvested crop land in feed grains—do	39		40	43	41	34	37	51	29	37	30
31	Harvested crop land in small grains—do	17		17	15	18	19	15	7	7	20	31
32	Plow land in hay and pasture—do	53		50	48	46	56	61	49	76	55	32

In the Ozark-Southeast Kansas-Oklahoma subregion (7–A), for example, over 40 percent of the harvested crop land was devoted to feed-grain production and about 15 percent to wheat. From 1919 to 1929 the cultivated acreage in this subregion declined, and wheat was replaced by corn. Dairy cattle, chickens, and hogs are all important, and over one-half of the beef cattle in the General Farming regions are included in this subregion. Butterfat is the chief dairy product, and feeder pigs are produced and shipped to the Corn Belt. The yellow to reddish silt-loam soils of the subregion are often stony and infertile. Harmful erosion is widespread and constitutes one of the primary problems of the subregion.

The southern Illinois and Indiana subregion (7–B) is characterized by relatively poor soils, although yields are somewhat higher than in the subregion previously discussed. The gray to brown soils in the Illinois portion, and to some extent in the Indiana portion, of the subregion are all underlain by a heavy clay subsoil and are usually acid. Farmers are endeavoring to get a larger proportion of the crop land into legumes, but liming is necessary. Associated with the increase in legumes there is an increase in dairying. A portion of the St. Louis milkshed is included in the subregion, and both whole-milk and butterfat production are important. Erosion is not serious over the greater part of the subregion where the clay subsoils are found, but control is badly needed on the silt and sandstone soils in southern Indiana.

AREAS OF VARIED PRODUCTION

The eastern Ohio and Middle Atlantic States subregion (7–C) consists, for the most part, of a narrow belt of uneven and broken terrain extending from south-central Ohio eastward to the Atlantic coast. The average cash sales per capita of farm population were higher in this region than in any other of the associated regions or subregions in 1929 because of the location of the region with respect to the urban population of the Northeast. Dairying is especially important, and almost 50 percent of the milk produced is sold as whole milk. Wheat production is also relatively important. About 20 percent of the harvested crop land in this region is devoted to wheat and 35 percent to feed-grain production. Serious erosion is widespread, with the exception of the strip along the Atlantic coast, and the yellow to reddish, sandy and clay loam soils are becoming depleted of both humus and fertility.

The central basin of Tennessee (7–D) is a small region where general livestock farming is predominant, although some cotton and tobacco are also raised. Corn is the dominant crop and over 50 percent of the harvested crop land is in corn. Whole milk is

produced for the local market. One of the chief problems of the region is erosion control.

The Virginia and West Virginia grazing region (included in 7–E) is a rough, broken, mountainous grazing territory where beef-cattle grazing and general livestock farming is followed. Over 75 percent of the cultivated land is in hay and pasture. Corn, which accounts for about 25 percent of the harvested acreage, is the chief field crop. The cattle grazed move to the eastern markets after being finished in the Shenandoah Valley and Lancaster County, Pa. Erosion control is a local problem.

The Tennessee, Shenandoah, and Cumberland Valleys are all limestone valleys with silt loam soils which are relatively fertile and which slant from southwest to northeast through the Southern Appalachian Mountain Region (7–F). Self-sufficing farming, together with fruit, truck, and some dairying and tobacco, is found in the Tennessee-Holston Valleys. General livestock farming, together with poultry, dairying, and some fruit and cash-grain farming, is found in the Shenandoah-Cumberland Valleys. The location of these valleys with respect to the centers of population and the general character of the surrounding agriculture gives them a distinct advantage in crop and livestock production. It is doubtful if any downward adjustment in crop acreage should be recommended except such adjustment as is required to control erosion or to provide the needed pasture for livestock. The gradual retirement of the cultivated crop land in the self-sufficing regions surrounding the valleys might cause some increase in the acreage of cultivated land in the valley region.

CHAPTER 5

THE COTTON BELT AND THE COTTON PROBLEM

The Cotton Belt ranks close to the Corn Belt in the value of agricultural production. Since more than half of the rural population is in the South, however, the value of farm products per person engaged in farming in the Corn Belt is about 2½ times greater than that for farmers in the Cotton Belt. One of the outstanding problems in this region, then, is concerned with farm income and the closely allied question of adequate living standards for farm people. This problem is intimately connected with the nature of the resources of the region and the way they are utilized; in the prospective demand for the products of these resources; and in the distribution and trend of the population as between farming and other occupations.

The economy of the Cotton Belt is, of course, built around the production and distribution of cotton. The growing and marketing of this crop affects the livelihood of millions of both agricultural and nonagricultural workers and the employment of vast amounts of capital. Cotton occupies over 50 percent of the harvested crop area and accounts for a considerably larger percentage of the total value of products sold. Corn is next to cotton in area of crop land occupied, but it does not enter into commercial trade to any great extent, since it is used primarily as a maintenance crop for both work stock and the human population. Annual legumes such as soybeans, cowpeas, and velvetbeans are grown extensively, but they find their greatest use as soil-improvement and forage crops. Peanuts, on the other hand, are grown both for feed and for commercial purposes. Vegetables, small fruits, and nuts are probably next to cotton as commercial crops.

MORE THAN COTTON IS INVOLVED

In formulating an adjustment program for the South, the immediate problem is to determine in what quantities a demand exists for the commodities produced in the South. How much cotton can be sold abroad and at home? How much feed and food crops may be consumed on the farms? What quantities of dairy products, vegetables, and fruits can be sold to the urban and mill population at remunerative prices?

In arriving at an estimate of the probable demand for cotton, one is immediately confronted with the question of prospective business activity and foreign demand. The domestic consumption of cotton is closely related to business conditions in this country, rising and falling as business activity increases or decreases. The problem of foreign demand is equally important. Although less than 10 percent of all the goods produced in the United States ordinarily are sold abroad, the South has regularly sold more than 50 percent of its cotton and 25 percent of its tobacco in foreign markets. The South, therefore, more than any other section of the United States, is concerned with what happens to foreign trade.

As long as this country was a debtor nation, cotton, its greatest export product, found a ready market abroad in helping to service foreign investments in this country, to balance international payments on imported products, and to pay for services. Now that the United States has become a creditor nation, the situation is entirely different. A means should be sought whereby foreign countries can meet their obligations to this country, amounting annually to hundreds of millions of dollars, and at the same time pay for their normal imports of American cotton as well as other products the United States has been accustomed to export.

THE VITAL IMPORTANCE OF THE EXPORT PROBLEM

Much depends not only upon the trend in nationalistic policies abroad, but also upon what the United States decides with respect to foreign and domestic policies. For the South there is the immediately pressing problem of whether to remove all restrictions and go after foreign markets at any cost, producing large supplies of cotton at whatever price the world can pay, or to continue the present restriction in cotton acreage and chance encouraging further foreign competition.

The probable consequences that are likely to follow each choice should be clearly understood. If the first of the two courses is followed, it might mean a return to 5-cent cotton. This means low living standards, low returns per acre, and the problem of restoring the depleted fertility that follows large crops. Ultimately the situation might not differ greatly from that prevalent in the South in 1932, when a carry-over of more than 13,000,000 bales of cotton accumulated—a supply equal to the annual consumption in normal years—with cotton selling for 5 or 6 cents a pound.

If the second course is followed and the acreage is restricted to meet the demand in this country, plus such foreign outlets as may be secured at reasonable prices, it will mean keeping out of cotton pro-

duction a substantial portion of the 42,000,000 to 45,000,000 acres of land normally planted to cotton.

If the already-projected cotton program for 1935 is carried through as planned, the carry-over of 10,600,000 bales on August 1, 1934, will be reduced, it is estimated, to about 7,500,000 bales on August 1, 1936. This carry-over will still be 2,000,000 to 3,000,000 bales above what has usually been considered normal for the crop. If the annual carry-over is to be stabilized around a normal level, and if growers desire to maintain the present price position of cotton, then some 10,000,000 to 12,000,000 acres of former cotton-producing land must be used for other purposes, unless domestic and foreign demands for cotton improve considerably beyond what they are at present.

If southern farmers decide they want to restrict the production of cotton to this extent, they are faced with the problem of what use to make of these extra acres. This raises the question of what alternative products might be grown instead of cotton and what is the demand for them.

OTHER PROBLEMS IN THE COTTON BELT

The demand for southern products other than cotton is closely tied up with domestic business conditions, both local and national. Until employment picks up through greater business activity, the market for fruits, vegetables, and other products will continue to be restricted. The problem is one of keeping the supply of these products in line with prospective demand and at the same time encouraging a wider home consumption.

There is also the problem of adjusting the labor supply to the new situation. If the restriction were only temporary this might be easily done, but if it were to be more permanent, the problem would be more difficult. The problem would be one of finding other means of livelihood for farmers no longer producing cotton, and of distributing the excess population between agricultural and urban industries either within the region or elsewhere, through migration.

Associated with the human problem is the matter of developing higher living standards. This would include encouraging the production of subsistence crops, and the further development of a "live-at-home" program. Undoubtedly much can be done in this direction without great additional outlays, and without materially increasing competition for other areas. This latter point, however, cannot be overlooked. Adjustments in one region should be made with due regard for their effect upon other regions.

There are also the problems of fertility and erosion, of size of farms, and of tenure relations.

TABLE 6.—COTTON BELT: *Summary of agricultural statistics by 17 major regions, 1930*

Line	Item	Total for Cotton Belt	Percent of United States total	Southwestern Irrigated Valleys (a)	Large-scale Cotton Farming (b)	Oklahoma-Texas General Farming (c)	Arkansas River Valley and Uplands (d)	Black Waxy Prairie of Texas (e)	Post-Oak Strip Upper Coastal Prairie (f)	Total for Hills and Rolling Uplands (g–i)	Southeast Texas, Mississippi, Piney Woods (j)	Mississippi and Red River Deltas (k)	Mississippi-Tennessee Brown Loam (l)	Tennessee and Limestone Valleys (m)	Total for Piedmont (n & o)	Coastal Plains (p & q)	Line
		Thousands of units, except dollars per capita															
1	Rural farm pop.—number	8,894	30	81	612	393	345	500	321	1,900	171	1,358	512	659	1,144	898	1
2	Value farm prod.—dollars	1,870,910	17	52,385	246,130	95,643	63,726	156,612	56,609	315,706	23,818	324,981	94,956	117,000	183,362	140,082	2
3	Sales per capita—do	177	56	626	363	201	147	278	142	129	100	216	153	136	128	261	3
4	Number of farms—number	1,827	29	12	121	79	70	106	70	403	34	317	114	132	216	153	4
5	Land in farms—acres	152,640	16	2,039	29,234	11,791	6,068	10,067	7,652	27,885	2,495	12,700	6,813	8,858	14,470	12,568	5
6	Pasture land—total—do	50,844	11		15,120	6,149	1,892	3,050	4,102	8,825	748	1,759	2,346	1,740	3,075	2,038	6
7	Crop land—total—do	74,518	18	662	13,407	5,117	2,988	6,657	3,308	12,048	865	8,699	3,018	4,212	6,782	6,755	7
8	Crop land harvested—do	65,112	18	662	12,477	4,379	2,487	6,227	2,833	10,430	690	7,743	2,588	3,463	5,393	5,740	8
9	Corn acreage—do	16,375	17	15	850	1,045	853	1,105	740	3,381	239	1,814	926	1,345	1,801	2,261	9
10	Corn—grain production—bu	249,936	12	299	12,443	16,097	12,289	22,243	12,437	47,292	2,845	35,579	16,877	22,410	23,079	26,046	10
11	Wheat acreage—acres	1,673	3	14	1,030	249	9	99		1		51	6	19	162	33	11
12	Oats acreage—do	1,426	4	2	252	573	67	336	1	32		15	6	4	93	44	12
13	Total hay acreage—do	2,976	4	140	198	352	248	126	67	401	20	408	197	331	143	345	13
14	Cotton acreage—do	36,296	84	407	7,389	1,529	1,103	4,215	1,848	6,058	356	5,222	1,325	1,621	2,807	2,416	14
15	Cotton production—bales	12,313	85	283	1,837	333	320	1,127	273	1,917	92	2,647	565	767	1,313	839	15
16	Tobacco acreage—acres	16	1										1	1	2	12	16
17	Vegetables for sale—do	298	11	39	22	22	6	10	14	53	8	13	21	11	23	56	17
18	Fruits and nuts—do	516	9	22	32	42	34	17	9	83	19	24	13	40	80	101	18
19	Cattle on farms—number	7,931	12	113	1,514	767	331	458	642	1,572	250	616	505	336	488	339	19
20	Cows for milk—do	2,739	13	35	330	234	128	172	150	649	57	249	175	160	257	143	20
21	Milk produced—gallons	1,022,627	9	23,049	140,427	99,064	51,742	77,022	42,724	206,941	14,664	77,229	55,689	74,624	111,378	48,076	21
22	Cows for beef—number	961	12	16	319	97	19	42	141	112	63	51	63	6	8	25	22
23	Swince on Apr. 1—do	5,831	10	21	361	289	252	236	255	1,142	359	951	385	262	320	998	23
24	Chickens (over 3 mo.)—do	49,682	13	528	6,542	4,383	2,274	4,284	3,795	8,414	949	5,410	2,224	3,375	4,577	2,927	24
		Per 100 acres of farm land, except as indicated in stub															
25	Cotton—bales	8		14	6	3	5	11	4	7	4	21	8	9	9	7	25
26	Tobacco—pounds	7											17	8	12	59	26
27	Corn—bushels	164		15	43	137	203	221	163	170	114	280	248	253	159	207	27
28	Cattle—number	5		6	5	7	5	5	8	6	10	5	7	4	3	3	28
29	Swine—do	4		1	1	2	4	2	3	4	14	7	6	3	2	8	29
30	Farm land in harv. crops—pct	43		32	43	37	41	62	37	37	28	61	38	39	37	46	30
31	Harv. crop land in cotton—pct	56		61	59	35	44	68	65	58	52	67	51	47	52	42	31
32	Plow land in hay—past—pct	19		21	20	22	26	9	21	22	25	12	32	23	15	12	32

THE WIDE DIFFERENCES AMONG SUBREGIONS

Although many of the foregoing problems apply generally to the entire Cotton Belt, some of them apply with more force in certain subregions within the belt than in others. The Cotton Belt is not uniform and homogeneous. Conditions, both physical and economic, differ widely. To recognize these differences and take them into account is itself a factor in adjustment.

In the regionalized type-of-farming map, the Cotton Belt is divided into 17 subregions. The proportion of the farm acreage in cotton and the production of cotton per 100 acres of farm land or per square mile vary widely from one region to another, as do the value of products sold per capita, the size of farms, the scale of operations, cultural practices, yields, and the like. (See table 6.)

In 1929, for example, cotton production per 100 acres of farm land averaged 8 bales for the entire Cotton Belt. However, the figure ranged from a low of 3 to 5 bales in such sections as the Oklahoma-Texas General Farming subregion, the Post-Oak Strip Upper Coastal Prairie, the Southeast Texas-Mississippi Piney Woods, and the Arkansas River Valley and Uplands subregions, to a high of more than 20 bales per 100 acres of farm land in the Mississippi and Arkansas River Deltas. The Irrigated Valleys of the Southwest, the Piedmont, the Black Waxy Prairie in Texas, and the Tennessee River and Limestone Valleys subregions, next to the Delta subregion, produce more cotton per 100 acres of farm land than do any other sections of the Cotton Belt.

In terms of income per capita, the situation is again somewhat different. In 1929, for example, the average value of products sold per capita was slightly over $175 for the entire Cotton Belt. The value ranged from as low as $100 in the Southeast Texas and Mississippi Piney Woods subregion to a high of over $625 in the Irrigated Valleys of the Southwest. The value of products sold in the Large Scale Cotton subregion of West Texas was $363 per capita, in the Black Waxy Prairie of Texas $278, and in the Gulf and Atlantic Coastal Plains $261, and in the Mississippi-Arkansas and Red River Deltas it was $216 per capita.

These figures indicate clearly the wide differences in production and income found in different parts of the Cotton Belt. In order to bring into sharper focus some of the problems peculiar to the particular parts of the region, it may be well to sketch briefly the more important characteristics of the different subregions.

COTTON IN THE SOUTHWEST

Of these the first to which attention will be directed is the Southwest Irrigated Valleys (8–A). These valleys specialize in the pro-

duction of medium-staple cotton, yields of which are relatively high. Most of the farms are owner-operated or operated by tenants other than share croppers, with seasonal labor hired for special jobs such as chopping and picking. This labor consists mainly of Mexican or transient white and negro families who alternate work in cotton with seasonal work on other crops.

One of the important cotton-growing regions of the country is in western Texas and southwestern Oklahoma. This, together with the area around Corpus Christi, Tex., comprises subregion 8–B, the Large Scale Cotton region of the United States. Cotton production is on an extensive scale, characterized by the use of multiple-row cultivating and planting machinery, little or no hand labor up to picking, and nonuse of fertilizer. It is in this general region that the expansion of cotton acreage has been greatest in recent years.

Considerable variation is found within the subregion. On the High Plains in the western part of the subregion, cotton occupies a very high percentage of the crop land harvested, grain sorghums being the only other important crop grown.

On the Low Rolling Plains to the east of the High Plains, two distinct types of farming are found: Range-livestock production which is sometimes supplemented by small-grain production, and the cotton and grain-sorghum type of farming. These two types are found in alternating areas within the subregion and the variation is due primarily to wide differences in topography and soil types. Cotton and grain sorghums occupy the level areas of sand and sandy loam soil and are practically the only crops grown; while on the heavier soils, grazing and small-grain production usually predominate. In southwestern Oklahoma, cotton is associated principally with grain sorghums in the counties adjacent to the Texas line, while farther to the east and north, grain sorghums are in part or wholly replaced by wheat.

OTHER SUBREGIONS IN TEXAS AND OKLAHOMA

To the east of this subregion is found the Texas-Oklahoma Cotton and General Farming subregion (8–C). In this area farming assumes a more diversified character, cotton occupying from one-third to more than one-half of the crop land, with feed grains, small grains, and special crops planted on the remainder. Woods and pasture in the Cross Timbers and some range-pasture land on the Grand Prairie, immediately to the east, complete the agricultural picture. In this subregion cotton is not grown so exclusively as in the adjoining Black Prairie on the east or the Large Scale subregion to the west.

In southeastern Oklahoma and in the Arkansas River Valley (8–D) cotton occupied about 50 percent of the harvested crop land and

cotton and corn together about 75 to 80 percent of the crop land in 1929. Five bales of cotton were produced per 100 acres of farm land and the value of products sold per capita was slightly less than $150 in the same season.

The Black Waxy Prairie of Texas (8–E) is one of the most important cotton-producing regions of the United States. It is an area of level, gently rolling land and dark, heavy soils of great natural fertility. Cotton justifiably maintains the key position in the cropping system. Corn ranks second in area, the rest of the crop area being devoted primarily to small grains, hay, and other forage crops. Livestock occupies a small place on the majority of farms in this area. Around the important cities a limited number of farmers are producing whole milk on a fairly large scale.

For the purposes of this discussion, the Texas Post-Oak Strip and Upper Coastal Prairie (8–F), the Piney Woods of northeast Texas (8–G), and southwestern Arkansas and northern Louisiana (8–H), will be considered together. While considerable variation exists, all of these subregions, on the whole, are relatively infertile. Cotton and corn are the principal crops, but the amount of cotton produced per 100 acres of farm land is considerably below the average for the entire Cotton Belt. Farming in the area is characterized by small farms, small irregularly shaped fields, small tools and, excepting 8–F, the use of considerable amounts of commercial fertilizer. In the Northeast Piney Woods subregion, a wide variety of special crops, mainly fruits and vegetables, are grown in certain sections. Beef cattle are found in rather large numbers in the Post-Oak and Upper Coastal Prairie subregion. Commercial timber is still found scattered throughout the various subregions.

MISSISSIPPI AND ALABAMA SUBREGIONS

The Mississippi-Alabama Clay Hills and Rolling Uplands (8–I) comprise the Long-leaf Pine Cut-over area of Mississippi, the Clay Hills proper, the Mississippi-Alabama Black Belt, and a part of the Upper Coastal Plains. The percentage of the total farm area in cotton ranges from 18 percent in the first and 12 percent in the second, to 17 to 21 percent in the third and fourth areas. Cotton production per 100 acres of farm land also varies somewhat. In this general area the nature of the soils, the topography, and the farming practices combined have resulted in serious erosion, and erosion control is one of the most pressing problems of adjustment.

In the southwestern part of Louisiana, southeastern Texas and Mississippi, and adjacent territory across the line in Alabama (8–J) lies a region where much of the present farming is of a marginal character. In this region the production of cotton is negligible.

Adjustments in this region are concerned with better living standards for the population, readjustments in farming units, and rehabilitation.

AREAS OF HIGH PRODUCTION

In contrast to this subregion of very low production are the Mississippi-Arkansas and Red River Deltas (8–K). This subregion has the highest production of cotton per 100 acres of farm land in the United States. Cotton justifiably holds first place in the cropping system and is grown to the practical exclusion of other crops, except such feed and minor crops as are grown for workstock and home consumption.

Three other subregions, including the Mississippi Brown Loam (8–L), the Tennessee River and Limestone Valleys (8–M), and the northern Piedmont (8–N), although differing as to soil types, are all considered good cotton land. In topography, size of farms, scale of operations, and cultural practices, these subregions are very similar. The relative freedom from boll-weevil damage in these three subregions and the resulting higher yields per acre make them the most important cotton-producing centers in the eastern Cotton Belt. Much of the cotton produced here is grown by cropper labor under the plantation system of farming. Erosion is a serious problem on many farms and there is a real need for control.

PROBLEMS IN THE OLD SOUTH

In the older cotton areas of the southern Piedmont (8–O), the soil is less fertile and erosion more severe. The farming in this subregion is in more serious need of adjustment than in the three subregions just discussed.

On the lighter soils of the Coastal Plains (8–P and 8–Q), soil erosion is not such an important problem because the topography is quite level. At one time cotton was of much greater importance throughout these subregions than it is at present. In recent years serious boll-weevil damage and the increasing importance of flue-cured tobacco and commercial peanuts have made cotton production relatively less important.

From this outline of the conditions and practices in different parts of the Cotton Belt, it is apparent that the problem of adjustment is not a uniform one by any means. To meet the problems of farmers in each subregion requires a detailed knowledge of local conditions, and only on this basis can any general adjustment program for the South be worked out.

CHAPTER 6

ADJUSTMENT PROBLEMS IN THE TOBACCO AREAS

Tobacco is a crop requiring intensive cultivation. On most farms where this crop is grown the acreage in tobacco represents only a small portion of the total crop land. In 1929 less than 0.5 percent of the total crop land in the United States was used for tobacco production. Tobacco is usually grown on only the most favorable soils, and as a consequence many scattered patches are frequently found on a farm. On specialized tobacco farms, where the soil type is quite uniform, this condition is less common. Quite often tobacco is grown as the only source of cash income, and the rest of the farm is devoted to the production of food and feed for home use.

Since colonial times the exporting of tobacco has played an important part in American trade abroad. Nearly half of the total United States production normally goes into the export trade. In recent years the volume of exports has declined, as has been the case for most agricultural exports, but the decline in demand for American tobacco abroad has been at a slower rate than the decline in demand for most other products. During the depression domestic consumption has also receded, but in recent months has shown an inclination to return to former levels.

In the case of tobacco acreage the need is chiefly for adjustment among regions and types rather than for a large net reduction in the country as a whole. (See table 7.) This is because the surplus stocks of some types of tobacco have been reduced to a more nearly normal level and because of the extreme differences in characteristics, uses, and market outlets among types.

BURLEY TOBACCO

Subregion 11–A includes the bulk of the burley tobacco district. Burley tobacco represents about one-fourth of the total tobacco production of the United States. Approximately 95 percent of the crop is consumed domestically. Consumption has not changed greatly during the past decade, as increases in the use of cigarettes were largely offset by decreases in chewing tobacco. The 1934 adjustment program resulted in some reduction of the large surplus, but stocks are still excessive. It appears, therefore, that for some time reduction in

burley acreage will be desirable. Since burley is generally grown on the best land, as is the case with most other types, a continuation of the tobacco-adjustment program probably will result in the substitution of other crops for tobacco on this good land. This would permit the production of more hay, the extension of pasture land, and the use of soil-improving crops. Serious erosion is quite common in this part of the country, which is underlain by limestone, and effective erosion control should be encouraged.

TABLE 7.—TOBACCO AND GENERAL FARMING REGIONS: *Summary of agricultural statistics by 6 major subregions, 1930*

Line	Item	Total for all tobacco regions	Percent of United States total	Burley (a)	Flue-cured (b)	Fire-cured (c)	Dark-air cured (d)	Southern Maryland (e)	Cigar types (f)
		Thousands of units, except dollars per capita							
1	Rural farm population—number	2,690	9	332	1,695	368	155	40	100
2	Value all farm products—dollars	578,652	5	100,330	314,173	73,825	26,232	9,405	54,687
3	Sales per capita—do	176	55	248	153	153	122	193	490
4	Number of farms—number	511	8	78	294	79	33	6	21
5	Land in farms—acres	39,613	4	6,340	20,541	6,961	2,980	692	2,099
6	Pasture land—total—do	10,520	2	3,501	3,028	2,037	967	158	829
7	Crop land—total—do	15,793	4	1,939	8,811	2,897	1,166	251	729
8	Crop land harvested—do	12,562	4	1,667	7,233	2,030	859	145	628
9	Corn acreage—do	5,211	5	780	2,730	1,010	468	60	163
10	Wheat acreage—do	568	1	98	268	125	49	27	1
11	Total hay acreage—do	1,951	3	438	552	462	207	18	274
12	Cotton acreage—do	2,127	5	-------	2,067	40	-------	-------	20
13	Tobacco acreage—do	1,537	82	220	962	228	58	28	41
14	Tobacco production—pounds	1,145,759	79	177,932	660,450	188,746	47,128	18,461	53,042
15	Vegetables for sale—acres	122	4	3	88	10	3	5	13
16	Fruits and nuts—do	204	3	18	105	42	16	2	21
17	Cattle on farms—number	1,638	3	432	547	301	131	21	206
18	Cows for milk—do	723	3	178	240	135	61	11	98
19	Milk produced—gallons	313,994	3	74,487	90,890	59,914	26,163	3,461	59,079
20	Cows for beef—number	89	1	16	52	9	4	1	7
21	Swine on farms—do	2,388	4	370	1,389	365	130	24	110
22	Chickens (over 3 months)—do	14,568	4	3,369	6,212	2,342	1,269	293	1,083
23	Sheep and lambs—do	1,483	3	1,195	50	119	75	18	26
		Per 100 acres farm land, except as indicated in stub							
24	Tobacco—pounds	2,892	-------	2,806	3,229	2,711	1,581	2,668	2,527
25	Corn—bushels	242	-------	285	207	332	296	184	108
26	Cotton—bales	2	-------	-------	4	-------	-------	-------	-------
27	Cattle—number	4	-------	7	3	4	4	3	10
28	Swine—do	6	-------	6	7	5	4	3	5
29	Farm land in harvested crop land—percent	32	-------	26	35	29	29	21	30
30	Harvested crop land in tobacco—percent	12	-------	13	13	11	7	19	7
31	Harvested crop land in feed grains—percent	40	-------	48	39	48	51	40	27
32	Plow land in hay and pasture—do	41	-------	70	16	52	55	47	54

DARK AIR-CURED AND FIRE-CURED TOBACCO

In the Dark Air-Cured tobacco area (11–D) and in the Fire-Cured tobacco area (11–C), in Kentucky, Tennessee, and Virginia, the adjustment problems have quite similar characteristics. Fire-cured tobacco now represents around 10 to 12 percent of the total tobacco production of the United States. About three-fourths of the crop goes into export trade, the volume of which has declined greatly.

Current exports are only about one-half as large as those of a decade ago. Domestic consumption which consists chiefly of snuff, has been maintained at a fairly even level. Production of dark air-cured tobacco now represents less than 5 percent of the total tobacco crop. Approximately three-fourths of the crop is consumed domestically, to a large extent as chewing tobacco. Formerly a large part of the crop was exported, but, as in the case of fire-cured tobacco, this trade has declined greatly. The 1934 adjustment program resulted in the removal of a considerable part of the surplus of these types of tobacco.

Indications are that a drastic adjustment in tobacco acreage should be continued in both subregions 11–C and 11–D. Even a return of former purchasing power both here and abroad is not expected to result in any great increase in the demand for these types of tobacco. Any adjustment of tobacco production in these areas probably will not involve a very large acreage on any farm, but it will include the substitution of some of the other farm crops for tobacco and permit a better balance in the entire farming system. As has been noted before, on most tobacco farms soil erosion is a serious problem, and in an adjustment program, use should be made of farm practices that will assist in erosion control.

FLUE-CURED TOBACCO

Flue-cured tobacco is grown in two major subregions indicated as 11–B. This type now represents about one-half of the total tobacco production of the United States. Approximately 60 percent of the crop is normally exported. During the past decade consumption increased both in this country and abroad. The 1934 adjustment program reduced stocks to a level slightly below normal.

Flue-cured tobacco is used chiefly in the production of cigarettes. The adjustment problem for flue-cured tobacco is not so acute as for burley and the dark types. Nevertheless, acreage control seems highly desirable for some time to come, and, if a program of cotton adjustment becomes a permanent policy, it will be important for producers of tobacco to maintain an adjustment program in order to avoid overexpansion in their major crop.

Although tobacco production is the chief source of cash income on many farms in subregion 11–B, there are also many farms within the region on which no tobacco is produced. Likewise, on many farms where tobacco is the specialty crop, cotton, peanuts, and feed crops are grown to advantage. A proper use of cover crops, crop-rotation practices, and the growing of soil-improving crops will tend to prevent much of the sheet erosion that now occurs on some farms. An adjustment in tobacco acreage along with adjustment of other

basic crops would permit the use of more legumes, and this in turn would allow modification in the use of commercial fertilizers. Many tobacco farms are operated with cropper labor, and—as is true throughout the South—some of the acreage taken out of production of basic crops might with advantage be used for an increased acreage of food and feed crops. This would tend to improve the dietary standards of farm families. On many farms, where considerable firewood is needed every year, there is a serious need for some increase in the size of farm woodlots.

SOUTHERN MARYLAND AND CIGAR TYPES

In subregion 11–E, the Southern Maryland type of tobacco is grown. This type represents less than 2 percent of the total tobacco production in the United States. In the past most of the crop was exported, but in recent years domestic consumption has exceeded exports. The surplus of this tobacco consists entirely of the lower grades, which were formerly exported. The adjustment problem in this area is concerned with a reduction in the acreage not well adapted to producing high-quality tobacco. On farms where such an adjustment is advisable, land uses suggested for the Flue-Cured area might be resorted to.

The scattered areas in which a cigar type of tobacco is grown, indicated as subregion 11–F, present a problem considerably different from that in most other tobacco areas. Cigar leaf represents about one-eighth of the total tobacco production of the United States. Practically the entire crop is consumed domestically. The adjustment program resulted in the removal of about one-third of the excess supply which existed when the program was first adopted. In most of these areas, tobacco production is usually combined with general farming, and in all probability adjustments in tobacco acreage can most advantageously be made by farmers in coordination with adjustments of other basic crops.

CHAPTER 7

THE WHEAT REGIONS AND THE WHEAT PROBLEM

The problem of adjustment in the Wheat and Small Grains regions naturally centers around wheat. It consists, first, of the general problem of adjusting an overextended cultivated area in wheat to conform more closely to prospective domestic requirements for food, feed, and seed, together with such restricted foreign outlets as are in prospect at remunerative prices; and, second, of adjusting production by regions and classes of wheat so as to maintain an equitable balance among them, while at the same time obtaining the desired production for the Nation as a whole. To these may be added a third problem of devising adjustments by regions, areas, and farms so as to conform as far as possible to individual and area differences and to farm-management practices recognized as good.

With the exception of the surplus-stocks problem, the fundamental factors affecting the Wheat and Small Grains regions at the present time are much the same as in 1932–33. The large carry-over of wheat which existed at the time the Agricultural Adjustment Act was inaugurated has been reduced for the most part to normal levels. This curtailment in stocks has resulted partly from the operation of the wheat program, but even more from the effects of the severe drought in 1933 and 1934. Stocks of wheat on July 1, 1935, are expected to be around 125,000,000 to 150,000,000 bushels as compared with almost 400,000,000 bushels on July 1, 1933. Domestic consumption, however, has not increased except for minor changes resulting from a slight increase in population. The potential wheat acreage has not decreased and the export movement is still severely restricted.

Average United States domestic requirements of 625,000,000 to 650,000,000 bushels apparently can be supplied by 50,000,000 acres at average yields, and exports of American wheat can hardly be depended upon to account for more than 6,000,000 to 8,000,000 acres in view of the present outlook. In fact, to account for such an acreage, net exports would have to increase 2 to 3 times over the very low level of the present year and the past year.

The acreage seeded to wheat averaged approximately 66,000,000 acres in the base period 1930 to 1932. Consequently, to keep some 8,000,000 to 10,000,000 acres out of production would seem to offer a direct way for wheat producers to maintain their present position.

In view of this, it would appear that continuing the control program for wheat offers the best insurance against a recurrence of the 1932–33 situation.

WHEAT IS WHEAT—BUT IT IS NOT ALL THE SAME

This statement of the problem relates to the country as a whole and is in terms of all wheat. Although wheat is often considered as a homogeneous commodity, it is in fact comprised of at least five distinct classes. These classes are hard red winter, hard red spring, soft red winter, durum, and white.

When the wheat problem is considered in terms of classes of wheat, certain classes bulk much larger in the total wheat picture than do others. The essential facts with respect to the relative production, domestic utilization, exports, and stocks of the different classes for the 5-year period 1929–30 to 1933–34 are shown in table 8.

TABLE 8.—*Production, disposition, and stocks of wheat, by classes, 1929–30 to 1933–34*

[Millions of bushels—Average 1929–30 to 1933–34]

Class of wheat	Production	Domestic utilization [1]	Exports	Stocks July 1, 1934 [2]	Normal minimum carry-over [1]
All wheat	783	690	[3] 61	290	125
Hard red winter	348	292	39	133	40
Soft red winter	179	177	2	37	15
Hard red spring	134	130	([4])	78	50
Durum	39	37	7	9	5
White	83	54	13	33	15

[1] Division of Statistical and Historical Research.
[2] See B. A. E. World Wheat Prospects, Aug. 29, 1934.
[3] Wheat, excluding flour. Approximately 26,000,000 bushels additional were exported as flour.
[4] About 500,000 bushels.

During these years, hard winter wheat represented 44 percent of the total wheat production of the United States. The total domestic utilization of wheat for these years was 50,000,000 to 75,000,000 bushels more than is normally used in this country. This is accounted for by the large amount of wheat fed to livestock during certain of these years. As a result of the break-down in export markets and the accumulation of large surpluses in this country, the price of wheat reached the unprecedented low level of 33 cents a bushel in December 1932. This low price put wheat on a feed basis, and, as a consequence, much larger quantities than normal were fed.

EFFECT OF THE EXPORT MARKET ON EACH CLASS OF WHEAT

The marked decline in export outlets in 1932–33 and 1933–34 likewise affected certain classes of wheat more seriously than others.

Hard winter wheat, for example, which had previously comprised the greatest American export class, dropped from a level of 50,000,000 to 75,000,000 bushels (disregarding exports of flour produced from this class of wheat) during the years 1929–30, 1931–32, down to 17,000,000 in 1932–33 and 1,400,000 bushels in 1933–34. Durum wheat exports were affected in a similar way, dropping from 14,800,000 bushels in 1929–30 to 1,700,000 in 1932–33, and ceasing altogether in 1933–34.

White wheat, on the other hand, dropped from a level of 14,000,000 to 18,000,000 bushels during 1929–30 and 1931–32, down to 2,200,000 bushels in 1932–33, but increased to 17,400,000 bushels in 1933–34. This reversal in trend during the latter year was due to the operation of the North Pacific Emergency Export Association. Exports of both soft red winter and hard spring wheat ceased entirely in 1932–33 and 1933–34, but neither had contributed more than 2,000,000 to 3,000,000 bushels in exports during the previous 5 years.

All of these data on exports by classes are in terms of wheat, excluding flour. Data showing the proportional break-down of the flour total by the classes of wheat used in its production are not available.

Unless some means can be devised for regaining the United States export market for wheat, the present drastic limitation of export outlets will continue to complicate the adjustment problem for all wheat, and particularly for those classes in which exports have been most heavily curtailed. The most pressing problem of adjustment, therefore, will be that of maintaining an equitable balance in the production of wheat among different regions and among different classes of wheat.

There is a rather marked degree of interchangeability among the different classes of wheat. Although certain classes are used for rather specific purposes, the range of choice is rather wide. To the extent that interchangeability of classes is complete, or nearly so, then the problem is one of all wheat; but if interchangeability is more limited in the case of some classes than others, then the problem in these cases is not one of all wheat but of particular classes.

WHEAT ADJUSTMENT BY REGIONS

Discussion of classes of wheat leads logically to the problem of adjustment by regions. The geographic distribution of Wheat and Small Grain regions as shown in the regionalized map (frontispiece) corresponds very closely with the geographic distribution of production of the diffent classes of wheat.

TABLE 9.—WHEAT AND SMALL-GRAIN REGIONS: *Summary of agricultural statistics by 3 major regions and 9 major subregions, 1930*

Line	Item	Total for all wheat regions	Percent of United States total	White Wheat subregions				Hard Spring Wheat subregions				Hard Winter Wheat subregions				Line
				Total	Columbia River Basin—Eastern portion (a)	Columbia River Basin—Western portion (b)	Southeastern Idaho (c)	Total	Wheat and Range Livestock (d)	Wheat and General Farming (e)	Specialized Wheat and Grains (f)	Total	Wheat and Range Livestock (g)	Specialized Wheat Farming (h)	Wheat and General Farming (i)	
		Thousands of units, except dollars per capita														
1	Rural farm population—number	1,434	5	123	62	40	21	647	165	179	303	664	103	277	284	1
2	Value all farm products—dollars	968,752	9	122,208	64,250	43,380	14,578	356,189	97,457	98,500	160,232	490,355	74,422	252,096	163,837	2
3	Sales per capita—do	622	195	941	976	1,047	642	495	541	491	473	685	673	860	520	3
4	Number of farms—number	315	5	28	14	9	5	134	36	37	61	153	24	62	67	4
5	Land in farms—acres	160,523	16	17,877	6,493	9,111	2,273	73,123	29,873	14,266	28,984	69,523	16,026	37,225	16,272	5
6	Pasture land—total—do	70,355	15	8,553	2,864	4,368	1,321	28,181	17,966	3,257	6,958	33,621	9,657	18,430	5,534	6
7	Crop land—total—do	84,595	20	8,473	3,382	3,759	1,332	40,542	10,952	10,265	19,325	35,580	6,234	19,219	10,127	7
8	Crop land harvested—do	70,199	20	4,729	2,051	1,892	786	33,940	8,178	9,278	16,484	31,530	5,035	16,941	9,554	8
9	Corn acreage—do	8,200	8	10	8	2	-------	2,605	302	1,777	526	5,585	1,253	2,685	1,647	9
10	Wheat acreage—do	38,168	61	3,642	1,521	1,555	566	15,635	4,992	2,422	8,221	18,891	2,369	10,491	6,031	10
11	Oats acreage—do	3,561	11	87	54	9	24	2,709	279	1,183	1,247	765	35	209	521	11
12	Barley acreage—do	5,443	42	108	63	15	30	4,027	465	1,437	2,124	1,308	358	919	31	12
13	Flax acreage—do	1,844	62	-------	-------	-------	-------	1,842	593	333	916	2	-------	2	-------	13
14	Total hay acreage—do	6,934	10	701	307	256	138	5,126	1,201	1,604	2,322	1,107	142	438	527	14
15	Potato acreage—do	189	6	20	8	7	5	134	12	44	78	35	4	20	11	15
16	Cattle on farms—number	6,285	10	368	177	120	71	2,612	807	754	1,051	3,305	712	1,470	1,123	16
17	Cows for milk—do	1,425	7	87	46	29	12	753	144	249	360	585	91	230	264	17
18	Milk produced—gallons	692,715	6	54,123	28,709	17,334	8,080	365,906	68,861	125,676	171,369	272,686	40,107	108,454	124,125	18
19	Butterfat sold—pounds	138,059	12	9,748	5,409	3,207	1,132	77,367	13,281	28,207	35,879	50,945	8,245	20,711	21,989	19
20	Cows for beef—number	1,028	13	59	24	20	15	295	171	62	62	674	178	352	144	20
21	Swine on Apr. 1—do	3,189	6	184	127	42	15	1,386	217	810	359	1,619	234	730	655	21
22	Chickens (over 3 months)—do	23,897	6	1,292	667	447	178	8,565	1,778	3,252	3,535	14,040	1,723	5,169	7,148	22
23	Sheep and lambs—do	6,502	11	2,238	650	847	741	2,738	1,761	354	623	1,526	184	1,061	281	23
		Per 100 acres farm land, except as indicated in stub														
24	Corn—bushels	62	-------	-------	1	-------	-------	20	2	94	2	122	101	112	59	24
25	Wheat—do	279	-------	375	607	212	366	197	152	158	263	340	180	390	383	25
26	Barley—do	48	-------	17	29	4	32	74	19	146	95	29	26	42	4	26
27	Flax—do	5	-------	-------	-------	-------	-------	10	6	13	13	-------	-------	-------	-------	27
28	Cattle—number	4	-------	2	3	1	3	4	3	5	4	5	4	4	7	28
29	Swine—do	2	-------	1	2	1	1	2	1	6	1	2	1	2	4	29
30	Farm land in harv. crop land—%	44	-------	26	32	21	35	46	27	65	57	45	31	46	59	30
31	Harv. crop land in sm. grains—%	59	-------	79	77	83	72	55	70	32	60	60	48	62	63	31
32	Crop land—fallow, idle, hay—%	21	-------	52	48	56	49	21	32	14	19	13	21	13	9	32

Hard-winter-wheat production, for example, is centered in eastern New Mexico, northwestern Texas and Oklahoma, Kansas, southern and western Nebraska, and eastern Colorado (4–G, 4–H, and 4–I); similarly, hard-spring- and durum-wheat production is centered in Minnesota, the Dakotas, and Montana (4–D, 4–E, and 4–F); and white-wheat production is centered in the Columbia Basin in western Idaho, eastern Washington, and northern Oregon, in California and certain of the Mountain States (4–A, 4–B and 4–C). In these regions wheat is the dominant enterprise, and it is grown either alone or in association with other small grains (flax, barley, and oats). The Soft Red Winter Wheat Belt, on the other hand, is located in Missouri, the eastern Corn Belt States, and the Appalachian Mountain States.

The relative importance of these different regions, in the production of wheat as well as in other important enterprises, is shown in table 9. The items in the lower part of the table give a particularly clear idea of the differences in productivity and in combinations of enterprises among different regions.

These differences among regions, as well as among subregions, complicate the problem of adjustment. The differences in soil and surface features, in rainfall and evaporation, in distance to market, in the presence or absence of alternative enterprises, make the farm-management problems of the various regions far from uniform. A brief discussion of the characteristics of these regions will help to bring the problems of each of them into sharper focus.

HARD WINTER WHEAT IN THE SOUTHWEST

The Hard Winter Wheat region in the Southwest may be divided into three fairly distinct subregions. The first of these subregions is the Wheat and Range Livestock territory (4–G) centering in western Kansas from the Arkansas River north to and including Wallace County, eastward 2 or 3 tiers of counties, and directly west into Colorado.

As indicated by the name, the farming in the region is largely a combination of wheat and grazing. When wheat is winterkilled or blows out, corn is the replacement crop in eastern Colorado, while grain sorghums or fallow are used in other parts of the region. Many of the farms in the territory, however, are straight wheat farms, with small amounts of sorghums for carrying work-stock and small numbers of other classes of livestock. The farming is done on a large scale with extensive use of mechanized methods. Much of the land in the territory has been broken only within the last 10 or 15 years. Prior to that time this was a strictly ranching country.

The territory as a whole is one of low and uncertain rainfall. Arable farming is beset with numerous hazards—not the least of which are frequent droughts, soil blowing, and lack of reserves.

To the south and east of this territory are other small areas in which the hazards of wheat farming are even greater. In contrast to the heavier soils of the region just discussed lighter soils of a sandy character are common in these areas. Soil blowing has been particularly bad during recent years. Because of the soil and climatic conditions, much of the agriculture of the region is in serious need of adjustment.

THE SPECIALIZED WHEAT-GROWING REGION

The second general subregion is what may be termed the Specialized Wheat-Growing region (4–H). It occupies the greater portion of the Panhandle of Texas and Oklahoma, the western half of Kansas, and western Nebraska. This general region is the center of the Hard Winter Wheat Belt and on the whole is productive wheatland. For the most part, it is a level treeless plain, with heavy soil, lending itself to large-scale mechanized farming. Although rather wide differences in size of farms, combinations of enterprises, and cultural practices occur in the region, wheat is the crop around which farming centers. Grain sorghums are grown throughout the region, but they are more concentrated in the southwestern portion. Considerable corn is grown in the eastern portion, and in northwestern Kansas barley is quite important.

The adjustment problem of the region is one of handling the land and other resources in such a way as to permit growing as much wheat as is consistent with the demands of the market and with the maintenance of yields, and at the same time conserving moisture and minimizing wind erosion. While farmers in different parts of the region have in general adapted their methods and practices to the existing soil and climatic conditions, there is still much room for improvement. Conserving moisture is a continual problem, and timeliness of operations has much to do with the degree of success ultimately attained.

The third and last subregion in the Hard Winter Wheat Belt centers around Enid, Okla., and Wichita, Kans. (4–I). In this region, wheat farming is conducted on smaller farms on which are found numerous other enterprises. Wheat is the principal cash crop, but it is supplemented by feed grains and livestock. The problems of the farmers in this area, therefore, differ somewhat from those of farmers in other parts of the Hard Winter Wheat Belt.

THE HARD SPRING WHEAT REGION

The Hard Spring Wheat region, similarly, may be divided into three subregions—the Wheat and Range Livestock territory centering in western North Dakota, South Dakota, and Montana (4–D); the Specialized Wheat and Small Grain territory centering in the northern half of North Dakota and extending south into South Dakota (4–F); and the Wheat and General Farming territory centering in southeastern North Dakota and adjacent territory in Minnesota and South Dakota (4–E).

There is considerable difference in the amount of farming done in these regions. Only about one-fourth (27 percent of the farm land) in the first subregion is in harvested crops, whereas 57 percent of the second and 65 percent of the third is in harvested crops. Even greater differences occur in the percentage of the harvested crop land in small grains, ranging from 70 percent, for example, in the first subregion to 60 percent in the second, and 32 percent in the third. The production of wheat per 100 acres of farm land also differed from 152 to 158 to 263 bushels, respectively, in 1929. Production of corn for grain is negligible in the first two subregions but is of more significance in the third; much the same holds true for barley. Flax production is almost twice as important in the second and third subregions as in the first.

These variations in the amount of farming as well as in the relative importance of the different enterprises results in large part from the wide range in physical conditions encountered in the region. Rainfall, for example, ranges from a high of 25 inches a year in the eastern part of the region to 15 inches or less in the western part. The nature of the physical environment in this region has made it especially well adapted to the production of high-protein wheat which, because of its good milling qualities, is in particular demand for the production of a high-grade flour. Somewhat similar conditions have contributed to the production of hard wheat in the Southwest. These two regions, in fact, are the predominant sources of this class of wheat.

The problems of adjustment differ somewhat in the three subregions outlined. In the Wheat and Grazing territory in the western part of the Spring Wheat region, wheat farming is hampered by a low and uncertain rainfall, prolonged droughts are not infrequent, and the problem of tiding over the dry years is acute.

The most pressing problem faced by the producers of the region is to develop a size of unit and a type of agriculture that will give them a better chance of success. A wider use of summer fallow not only would assist in conserving the limited amount of moisture but would at the same time help to control weeds. Adopting this prac-

tice as an adjustment measure would encourage better use of the land and other resources, and at the same time would be in the direction of the needed downward adjustment in wheat production.

THE WHEAT AND SMALL-GRAINS REGION

In the Specialized Wheat and Small Grains Region (4–F), which is adjacent on the east to the territory just discussed, wheat is the dominant small grain but is grown in combination with flax, barley, and oats. The problem here is first to adjust the cultivated area in wheat to conform to the demands of the present restricted market. Coupled with this is the problem of fitting the other grain and livestock enterprises into the new wheat set-up. The wheatlands of certain parts of this territory have become so seriously infested with Canadian thistle and sow-thistle, quack grass, and other weeds that yields have been curtailed and dockage is high. In fact, farmers in this general area may be forced into using more intertilled crops or employing more summer fallow in order to solve the serious weed problem.

Flax, like wheat, is a cash crop and is grown as an alternative for or supplement to wheat on the average farm of the territory. Since United States production of flax has been so materially curtailed during recent years, and since this country is importing such a large proportion of the total requirements, an upward adjustment of flax acreage in this territory is probably in order. The building up of feed reserves as an insurance against dry years and the further use of summer fallow to conserve moisture and to control weeds also should be encouraged.

In the Wheat and General Farming region in the Southern Red River Valley and adjacent territory (4–E), agriculture is probably in better adjustment than in the other two Spring Wheat regions that have been discussed. The relative importance of wheat in the farming system of this territory has tended to decline. In 1929 small grain occupied only about one-third of the harvested crop land. It has been replaced by corn and other feed grains, and with this change has come greater dependence on livestock and livestock products. The problem of the farmers in this region is to adapt their farming systems to the new situation in the demand for wheat, fitting their other crop and livestock enterprises around wheat as the principal cash crop and adopting the better methods and practices of production that have demonstrated their superiority in the region.

THE WHITE WHEAT AND OTHER REGIONS

The White Wheat region, centering in the Columbia Basin of Washington, Oregon, and Idaho, is probably the most noted dry-land

farming region in the United States. The region may be divided into an eastern and western portion. The eastern portion (4-A), known as the Palouse, has both a higher rainfall and a more uneven topography than the western part, known as the Big Bend country (4-B). Wheat is the predominant enterprise in both subregions; approximately one-third of the land in farms in the Palouse and one-fifth in the Big Bend was in harvested crop land in 1929, and the percentages of the harvested crop land in small grains were 77 and 83 percent respectively.

The prevailing practice in cropping is to alternate wheat and summer fallow. Conditions in the Big Bend practically preclude any other practice, but in the Palouse some other enterprises may be followed.

A fairly high percentage of the wheat grown in this territory normally has found a market outside of the United States, much of it going to the Orient. With the decline in American export markets, this region has been brought sharply face to face with an adjustment problem. Its problem has been made more difficult by virtue of the geographic location of the region and the long freight haul to markets to the east.

As indicated previously, the physical environment seriously limits alternative lines of production. The farmers of the region virtually are faced with the problem of growing wheat or nothing. Some people most familiar with the region feel that to take out of wheat some of the hilltops where erosion has been worst and put them into pasture would be in line with conserving resources and at the same time in the direction of the needed adjustment in wheat. It is pointed out that this would check erosion further down the slopes and would also contribute to stabilizing agriculture.

The remaining important wheat region centers in the Corn Belt and the Appalachian States. Inasmuch as wheat fits more as a supplementary than as a dominant enterprise in the farming systems of these areas, the adjustment problems involved are considered elsewhere.

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CHAPTER 8

THE DAIRY REGIONS AND THE DAIRY PROBLEM

Commercial dairying is concentrated in the Northeast, in the Lake States of the Middle West, along a narrow strip of the North Pacific coast, and in a number of smaller areas adjoining cities of considerable size (designated as "Miscellaneous City Areas" under Mixed Farming on the regionalized map) where milk is produced for consumption as fluid milk or sweet cream. Some dairying is found in every section of the United States.

The relative contribution of the Dairy regions to total dairy production is given in table 3, and the statistical description of the several regions and subregions is given in table 10.

To obtain a clear view of the regional problems involved, it is desirable to start with a general analysis of the dairy situation. To begin with, certain broad characteristics should be noted. First, adjustment in dairy farming is an exceedingly complex problem since dairying is so widely scattered and since production is affected by changes in both hay and pasture production and in the feed-grain situation. Second, American foreign trade in dairy products is very small; and since milk and butter cannot well be stored over any considerable period, dairy prices are usually forced to the level at which current production and current consumption are approximately balanced. Third, the returns received by dairymen are closely related to the volume of urban consumers' incomes since dairy products, especially whole milk and sweet cream, are moved almost directly from producers to consumers, and are used almost altogether for food. Fourth, the relative distribution of the milk produced as between whole milk, sweet cream, cheese, butter, and condensed and evaporated milk, is almost wholly dependent upon the market situation.

Such data as are available indicate that the per capita consumption of dairy products has not materially changed, at least since 1910, with the exception of a decrease in the war period, followed by a gradual recovery. The increases in the number of dairy cattle and in dairy production have closely paralleled the increases in population. The regional trends in milk cow numbers and in milk production and the present situation in each region, however, have been and are quite different.

TABLE 10.—DAIRY REGIONS: *Summary of agricultural statistics by 11 major subregions, 1930*

Line	Item	Total for all dairy regions	Percent of United States total	North Pacific coast	Lake States region			Chicago-Milwaukee milkshed	Detroit-Lansing milkshed	New York milkshed			Boston milkshed	Miscellaneous dairy areas	Line
					Subregion A	Subregion B	Subregion C			Subregion A	Subregion B	Subregion C			
				(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	
		Thousands of units, except dollars per capita													
1	Rural farm population—number	3,260	11	40	511	331	427	99	196	453	182	159	159	703	1
2	Value all farm products—dollars	1,404,864	13	20,904	233,413	160,204	122,919	65,542	75,944	253,311	91,811	55,881	81,572	243,363	2
3	Sales per capita—do	371	116	461	393	416	231	602	340	497	445	287	436	294	3
4	Number of farms—number	700	11	9	106	68	91	21	43	102	42	34	40	144	4
5	Land in farms—acres	82,904	8	1,703	11,956	9,767	11,962	2,494	4,432	12,645	5,450	3,269	5,321	13,905	5
6	Pasture land—total—do	33,500	7	1,168	4,753	3,475	4,829	709	1,413	5,589	2,396	978	2,798	5,392	6
7	Crop land—total—do	36,594	9	163	5,719	5,356	4,797	1,617	2,546	5,244	2,175	1,408	1,263	6,306	7
8	Crop land harvested—do	32,814	9	141	5,470	5,154	4,388	1,529	2,188	4,578	1,791	1,161	1,167	5,247	8
9	Corn acreage—do	5,564	6	4	1,010	1,164	439	495	356	434	128	176	42	1,316	9
10	Wheat acreage—do	1,785	3	2	55	226	143	29	276	78	21	131	----------	824	10
11	Oats acreage—do	4,909	15	4	1,271	961	714	330	375	334	169	167	15	569	11
12	Total hay acreage—do	14,678	22	105	2,150	1,487	2,115	406	748	3,127	1,148	503	1,013	1,876	12
13	Potato acreage—do	687	23	3	124	72	129	20	49	83	52	38	19	98	13
14	Vegetables for sale—do	383	14	1	86	33	24	21	31	59	9	11	15	93	14
15	Fruits and nuts—do	598	10	5	29	12	18	8	54	133	48	61	34	196	15
16	Cattle on farms—number	10,200	16	214	2,113	1,381	1,144	423	407	1,733	646	283	477	1,379	16
17	Cows for milk—do	5,157	25	83	1,110	690	528	235	196	935	334	142	246	658	17
18	Milk produced—gallons	3,371,738	31	61,164	786,249	411,914	325,355	177,495	128,117	630,211	223,453	89,950	144,311	393,519	18
19	Whole milk sold—do	2,200,665	49	39,999	592,576	83,455	68,369	163,399	87,395	555,926	192,761	65,728	99,344	251,713	19
20	Butterfat sold—pounds	254,025	21	5,639	45,990	94,452	63,971	1,570	6,634	4,317	1,980	1,038	6,324	22,110	20
21	Cows for beef—number	109	1	13	8	12	13	4	6	9	4	2	3	35	21
22	Swine on Apr. 1—do	3,675	7	29	801	1,143	336	228	160	146	47	102	50	633	22
23	Chickens (over 3 months)—do	50,549	13	582	7,461	6,399	4,179	2,022	2,877	7,039	3,318	2,694	1,932	12,046	23
24	Sheep and lambs—do	3,150	6	207	256	316	494	85	541	237	167	46	52	749	24
		Per 100 acres of farm land, except as indicated in stub													
25	Corn—bushels	108	----------	9	81	234	35	339	109	35	7	141	5	212	25
26	Corn silage—tons	18	----------	1	41	23	7	57	15	18	14	9	6	10	26
27	Dairy cows—number	6	----------	5	9	7	4	9	4	7	6	4	5	5	27
28	Milk sold—gallons	2,654	----------	2,349	4,956	854	572	6,549	1,972	4,396	3,537	2,011	1,867	1,810	28
29	Butterfat sold—pounds	306	----------	331	385	967	535	63	150	34	36	32	119	159	29
30	Farm land in harvested crop land—percent	40	----------	8	46	53	37	61	49	36	33	36	22	38	30
31	Harvested crop land in feed grains—do	28	----------	4	35	40	26	47	27	10	11	26	2	14	31
32	Plow land in hay and pasture—do	57	----------	88	49	38	55	38	49	77	74	54	90	57	32

THE GREAT FLUID MILK REGION

Production of milk for consumption as fluid milk is concentrated in the Pennsylvania-New York-New England region. In this region, the steady increase in the urban population centering around Philadelphia, New York, and Boston has resulted in an effective demand for a steadily increasing volume of fluid milk and sweet cream. On the other hand, the limited production of feed in the region has restricted the increase in the number of cows kept for milk and tended to stabilize production, so that the steady increase in the demand for fluid milk and sweet cream has resulted in a steady decrease in the production of butterfat for butter and of condensed and evaporated milk. The number of dairy cows in New England, for example, decreased from 1920 into 1928, and creamery-butter production declined over 80 percent from 1921 to 1933 in this area.

Dairying is highly specialized in the Pennsylvania-New York-New England region, and it is to the interest of fluid-milk dairymen to devote considerable effort to adjusting production to the normal market requirements for fluid milk and sweet cream, and to improving their marketing organization. A similar problem is encountered in every metropolitan milkshed, as for example in the areas around Richmond, Va., Los Angeles, Calif., Detroit, Mich., and Chicago, Ill.

It seems desirable for producers to continue the milk-marketing agreement and licensing program and develop it further, either under State or under Federal control. Schedules of minimum prices to be paid by distributors according to the use made of the milk, and provision for prorating the proceeds among the producers, by the use of either a weighted average price or the base-surplus method, are included in the agreements developed and administered in fluid-milk markets by the Dairy Section of the Agricultural Adjustment Administration. It should be kept in mind, however, that the fluid-milk problem cannot be dissociated from the butterfat problem.

BUTTERFAT PRODUCTION IN THE MIDWEST

Butterfat production is centered in the Lake States Dairy region and in the Western Corn Belt. While dairy-cow numbers have been constant or only slowly increasing in the East, the numbers of cows kept for milk in the Lake States and the Midwest have increased sharply, and creamery-butter production approximately doubled from 1920 to 1933. The production of both cheese and condensed and evaporated milk increased about 35 percent in the same period.

The marked increases in midwestern production were due to the extremely favorable price situation that developed after the close of the World War. The consumption of dairy products had been restricted by the War, and prices of dairy products were high relative to the prices of meat animals from 1920–21 to 1924–25, and to the prices of feed grains from 1920–21 into 1932–33. The increased production of creamery butter was absorbed by a recovery of butter consumption to the 1910–1914 level of about 18 pounds per capita, by a decrease in the production of farm butter, and by an increase of almost 20 percent in population from 1920 to 1933.

After increasing almost every year from 1900 to 1924, the number of dairy cows in the Midwest was stabilized in 1925, 1926, and 1927. With the upswing in the beef-cattle cycle and the almost complete cessation of culling of dairy herds that soon followed, the increases in dairy-cow numbers were resumed in 1929 and continued into 1934. The drought, together with the Government purchase program for cattle, including the program still in operation for the payment of indemnities on dairy cattle with bovine tuberculosis and Bang's disease, resulted in at least normal culling and a reduction in dairy-cow numbers on January 1, 1935, as compared with January 1, 1934. Milk production per cow milked, which had increased from 1920 to 1929, decreased approximately 10 percent between 1929 and 1934 as cow numbers increased, the market weakened, and the drought developed.

At present, then, dairymen in the Lake States and the Corn Belt are faced with the problem of continued culling and improvement of their herds and of preventing a too-rapid increase in milk and butterfat production. Whole-milk dairymen should be interested in this problem, since over any considerable period, prices of surplus milk, cream, and whole milk are usually related to butterfat prices.

DAIRY AND MEAT PROBLEMS ARE RELATED

The dairy situation is closely related to the general meat-animal and feed-grain situation. Dairy cattle numbers have been increased by a gradual shift from beef cattle to dairy cattle. The total number of cattle has not materially changed. Dairymen, then, are interested in the maintenance of beef-cattle prices at a reasonable level, since a further shift toward dairy cattle will be encouraged whenever prices of dairy products are relatively high as compared with prices of beef cattle.

The feed-grain and dairy situation has already been discussed in connection with the Corn Belt. In general, dairymen are interested in a balanced feed-grain production in much the same way as hog producers and livestock feeders are interested. Corn at 15 cents a

bushel, the price that prevailed in 1932–33, will cause increased competition because new men will be attracted into the business and because there will be heavier feeding by dairymen already established; on the other hand a very high price for corn, such as has resulted from the drought, squeezes the established dairymen who must keep going. Dairymen are also interested in the use to which any land taken out of feed-grain production by adjustment programs may be put.

FARM MANAGEMENT PROBLEMS DIFFER

Aside from the problem of adjusting dairy production to the existing market demand, the farm-management problems in the several areas are important. In the Pennsylvania-New York-New England Dairy Region, the typical system of farming centers around the dairy enterprise. Cash-crop production is only locally important, and erosion is not a wide-spread problem, since 55 to 90 percent of the cultivated crop land is already in hay and pasture, and so much feed is purchased that such other cultivated land as is available must generally be used for the production of silage or some other form of feed. For this reason, it is doubtful if any downward adjustment in crop acreage is to be expected in this region. Butter production in this region will almost certainly be further reduced as population increases and brings an increased demand for fluid milk.

Although dairying is the dominant enterprise in the Lake States Dairy region, a general type of farming is often followed. Cheese production is especially important in Wisconsin. Where butterfat is sold, the skim milk, supplemented with a small amount of concentrated feed, can be used for hog production, veal calves can be raised, and some potatoes and other crops can be grown along with the feed crops, since cheap feed can often be purchased if needed. On the whole, however, the weather is so cool that corn cannot be successfully grown for grain in competition with the Corn Belt. Erosion is not usually a serious problem, but the northern or cut-over strip does offer a serious submarginal land problem.

Dairying is merely an important enterprise in a general farming system in the Ozark subregion in southern Missouri. Butterfat is the chief product. Erosion is widespread and increased attention should be given to erosion control in this subregion.

A specialized type of farming is followed in the North Pacific coast subregion. Both whole milk and butterfat are produced. About 90 percent of the cultivated land is in hay and pasture and an additional 5 percent is devoted to feed production.

CHAPTER 9

THE RANGE LIVESTOCK REGIONS

The Range Livestock regions are located mainly in the Western States, centering particularly in the Mountain and Pacific States, the western Dakotas, the Flint Hills of Kansas and Oklahoma, and a large part of Western Texas. For the most part rainfall is low and uncertain and the regions are unadapted to farming except with irrigation. The only important agricultural use that can be made of the land, therefore, is for grazing. There are practically no alternatives to grazing, and it is necessary that even grazing be carried on on an extensive scale, since grazing land over a large part of the region has only a small fraction of the carrying capacity of grazing land in the Corn Belt. (See table 11.)

The carrying capacity varies considerably within the Range Livestock regions because of the great diversity in topography, soil, rainfall, and temperature. Where the vegetation in one area might provide grazing for the same number of animals as in another area, there is often a marked variation in the length of the grazing season on account of differences in altitude. The type of vegetation varies greatly in different parts of the region. In much of it there are buffalo and grama grasses. Other plants important for grazing in some sections include browse, mesquite brush, bunch grass, and various kinds of weeds.

The variations in carrying capacity in the region are indicated by the number of cattle per section reported in the 1930 census. About 10 cattle per section were reported for the Range Livestock region as a whole. In the Utah and Nevada basin (3–B), fewer than 2 cattle per section were reported, whereas in the Edwards Plateau section in southwestern Texas (3–G), 20 cattle per section were reported. An even larger number per section were reported for the Sandhills in Nebraska (3–E) and the Flint Hills in Kansas (3–I).

The Range Livestock regions contribute materially to the Nation's meat supply. Of the total cattle on farms reported in the 1930 census, 13 percent were located in this region. About 37 percent of the cows kept for beef production were reported as in this area, and 44 percent of the sheep and lambs. Only 3 percent of the total number of hogs in the country were located in the region—this fact being due, of course, to the very limited production of feed grains. Only about 2 percent of the United States corn crop is normally produced in this vast territory.

TABLE 11.—RANGE LIVESTOCK: *Summary of agricultural statistics by 9 major subregions, 1930*

Line	Item	Total for Range Livestock regions	Percent of United States total	Harney Basin Blue Mountains (a)	Utah-Nevada Basin (b)	Rocky Mountains and associated basins (c)	Northern Great Plains (d)	Sandhills of Nebraska (e)	Southwest Woodlands, Grasslands, and Semi-Deserts (f)	Edwards Plateau (g)	Range Livestock and Cotton (h)	Flint Hills of Kansas (i)	Line
		Thousands of units, except dollars per capita											
1	Rural farm population—number	907	3	39	21	135	160	28	127	88	192	117	1
2	Value all farm products—dollars	514,302	5	35,534	13,663	91,081	100,347	22,518	58,317	54,882	62,264	75,696	2
3	Sales per capita—do	523	164	862	598	629	575	738	429	578	293	592	3
4	Number of farms—number	191	3	9	5	31	36	6	23	19	35	27	4
5	Land in farms—acres	178,405	18	8,722	2,099	25,581	39,822	9,108	47,431	19,759	18,633	7,250	5
6	Pasture land—total—do	165,340	36	9,472	2,712	25,821	33,106	7,027	48,872	18,277	15,885	4,168	6
7	Crop land—total—do	22,792	6	1,271	483	4,154	7,162	1,925	1,115	1,310	2,628	2,744	7
8	Crop land harvested—do	18,801	5	932	256	3,204	6,175	1,816	730	1,147	2,104	2,437	8
9	Corn acreage—do	3,104	3	2	13	39	933	349	118	147	439	1,064	9
10	Corn grain production—bushels	38,751	2	46	225	352	6,771	4,883	1,303	2,531	6,170	16,470	10
11	Wheat acreage—acres	3,019	5	89	54	566	1,638	87	196	31	69	289	11
12	Wheat production—bushels	37,051	4	1,550	699	9,178	17,257	1,102	3,424	368	530	2,943	12
13	Total hay acreage—acres	6,627	10	769	149	1,872	1,960	1,183	78	28	79	509	13
14	Total hay production—tons	6,944	8	940	236	2,306	1,736	875	114	27	80	630	14
15	Vegetables for sale—acres	53	2	(1)	1	12	2	(1)	5	2	29	2	15
16	Fruits and nuts—do	51	1	3	3	8	2		8	9	10	8	16
17	Cattle on farms—number	8,582	13	632	226	1,225	1,416	561	1,916	709	1,204	693	17
18	Cows for milk—do	551	3	34	14	80	129	30	26	50	91	97	18
19	Milk produced—gallons	268,512	2	22,054	7,721	47,245	64,411	13,805	11,127	19,652	34,145	48,352	19
20	Cows for beef—number	2,923	37	214	83	421	438	189	845	249	376	108	20
21	Swine on Apr. 1—do	1,397	3	41	14	105	439	103	36	87	124	448	21
22	Chickens (over 3 months)—do	9,697	3	285	121	1,012	1,675	369	488	966	1,515	3,266	22
23	Sheep and lambs—do	25,150	44	3,341	2,646	7,645	2,531	33	3,503	4,963	412	76	23
		Per 100 acres farm land, except as indicated in stub											
24	Cattle per 640 acres land—number	5		7	11	5	4	6	4	4	6	10	24
25	Sheep per 640 acres land—do	14		38	126	30	6		7	25	2	1	25
26	Swine—do	1			1		1	1			1	45	26
27	Wheat—bushels	21		18	33	45	43	12	7	2	3	41	27
28	Corn—do	22		1	11	1	17	54	3	13	33	227	28
29	Pasture—acres	93		109	129	101	83	77	103	92	85	57	29
30	Hay—tons	4		11	11	9	4	10				9	30
31	Farm land in harvested crop land—percent	11		11	12	13	16	20	2	6	11	34	31
32	Plow land in hay and pasture—do	62		88	77	70	66	72	80	26	32	40	32

[1] Less than 1,000 acres.

TYPES OF GRAZING IN THE RANGE COUNTRY

The grazing lands in the western range country can be divided roughly into three types, according to length of grazing season. They are the summer range, year-long range, and winter range. The summer range is located largely in the higher altitudes of the Rocky Mountain area. In these sections, livestock are grazed in the higher altitudes during the summer and in the foothills during the spring and fall. They are brought down into the valleys during the winter, and here they are usually maintained largely on hay produced in the irrigated sections. In western Texas and over a great part of New Mexico, Arizona, and southern California, cattle are grazed on the range the year round, with some supplementary winter feeding. The winter range is mostly desert, and is used more for sheep than for cattle. Range of this type is conserved during the summer in order to have it available during the winter when the range in the higher altitudes is covered with snow.

The bulk of marketings of livestock produced in the Range Livestock region occurs in the fall, following the end of the summer grazing season. A substantial proportion of the cattle marketed from the Range States are moved into Corn Belt feed lots for further finishing. The number varies materially from year to year, depending upon the volume of marketings, the price and supply of feed grains, and the returns from cattle-feeding operations during the previous feeding season. A considerable volume of the lambs produced in the Western States also are shipped to feed lots for further finishing in the Corn Belt and in the lamb-feeding districts of Colorado, Kansas, and Nebraska. However, a larger proportion of the lambs marketed from the range region during the autumn marketing season are sold for immediate slaughter than is the case with cattle.

There is some movement of cattle from one grazing area to another before they are shipped to central markets. For example, a substantial number of cattle are moved every spring from Texas to the Flint Hills of Kansas and Oklahoma. They are then grazed in that area until late summer, when they are shipped to market as grass-fat cattle. These are disposed of either for slaughter or for movement into Corn Belt feed lots for a short period of grain feeding. In some areas of Texas and other southwestern states, the mild winter and early spring make it possible to have grass cattle ready for market in April and May, and these normally constitute the bulk of the market movement from the Range Livestock region during that season of the year.

MORE THAN HALF THE RANGE IS PUBLIC PROPERTY

Less than half of the total area in the Range Livestock region is privately owned. The rest of the land is owned by the Federal Government or by States. This includes the public domain, National and State forests, and Indian lands. The proportion of the total area privately owned is, roughly, 20 percent in Arizona, 60 percent in Colorado, 30 percent in Idaho, 60 percent in Montana, 10 percent in Nevada, 40 percent in New Mexico, 30 percent in Utah, and 40 percent in Wyoming. The use and control of public lands for grazing has been an important element in the problem of range-livestock production since the beginning of the industry.

Although grazing is the major use made of land in the Range Livestock region, limited areas of intensive farming are to be found in the irrigated valleys throughout the region. In these areas, cattle and sheep for slaughter are fattened on grass, alfalfa hay, and concentrates. The irrigated valleys also support various other specialized types of intensive farming. Dry-land wheat farming, too, is found interspersed with range-livestock production. Because of the hazard of low and uncertain rainfall, together with the unfavorable prices of recent years, many of these dry-land farms have been abandoned and are being reconverted into grazing lands.

THE CHIEF PROBLEM OF RANGE LIVESTOCK

The major adjustment problem of the Range Livestock region is that of conserving and restoring the range for grazing purposes. From the beginning, range-livestock production has been fraught with many uncertainties and hazards. Droughts, severe winters. uncertainty as to tenure and privilege on public lands, and the eventual uses of all lands in the region, and sharp fluctuations in prices and credit have been major problems. These and other hazards have resulted in the range-livestock business being conducted largely on a temporary basis and with a minimum of long-time planning.

The inevitable consequence has been a depletion of the range. For example, the tendency to make full use of carrying capacity during years of favorable weather conditions has resulted in overstocked ranges during less favorable years, and this has not only greatly impaired the productivity of the range, but has also caused heavy losses in severe winters.

In general, with the grazing practices followed, variable weather conditions and other changing factors have necessitated a series of rapid expansions and contractions in the number of livestock carried. Sound ranching systems or permanent regional programs cannot be developed so long as such speculative elements prevail to the extent that they have in past years.

Another important factor that has contributed materially to the decline in the productivity of the range has been the lack of full recognition of the agricultural limitations in the Range Livestock region.

In the westward movement of the population in the United States, livestock grazing continued to give way to farming and a more intensive use of the land. Hence, cattle and sheep were pushed farther into the nontillable and arid regions. This movement was not checked until the farming area had been extended to the very borders of the semiarid region. It was not long, however, before enthusiasm for dry-land farming brought about a further westward expansion. Land that had been used exclusively for grazing was divided into homesteads, and cultivated crops were planted. This development was particularly marked after years of relatively heavy rainfall in the arid and semiarid regions.

A large share of these ventures in dry-land farming proved unsuccessful, but not until heavy losses had been sustained by dry-land farmers and much land had been cultivated that should have remained in native grass. The farming ventures also reduced the amount of available grazing land and thus contributed materially to overgrazing. Scattered throughout the Range Livestock region are many areas divided into operating units of such limited size that economical livestock operation is impossible.

THE NEED FOR AN ADEQUATE POLICY

There is real need for describing clearly those areas in the Western States which, over a period of years, can best be utilized as grazing lands, and for encouraging the adoption of grazing policies that will maintain or improve the productivity of the range for this purpose. The development of such policies would necessarily involve determining for each subregion a carrying capacity that would permit a restoration of grazing lands, and at the same time provide for the adversities of drought and severe winters. It would also be necessary to determine the proper combinations and segregations of cattle and sheep grazing, as well as of grazing and irrigated farming, and to coordinate policies for the use of privately owned land with those for the use of public land.

Considerable progress is being made in controlling the use of Federally owned grazing land. For many years the Forest Service of the United States Department of Agriculture has exercised control over grazing on the National forests. Controlling the number of livestock grazed in the forests has done much to prevent soil erosion and to improve the productivity of the land, both for grazing and forest purposes.

A program of grazing control on the public domain is also getting under way. This was made possible by the Taylor Grazing Act, passed in 1934, which authorizes the Secretary of the Interior to regulate grazing on 80,000,000 acres of the public domain, in order to stop injury to the grazing lands by preventing overgrazing and soil deterioration. Steps are now being taken to establish grazing districts as provided for in the Act, and to set up the necessary local and regional administrative machinery for putting the grazing-control program into effect. Experience gained through the administration of this Act should be of much value in determining the feasibility of a general grazing-control program on private as well as public lands as a means of conserving soil, improving plant growth, and stabilizing the livestock industry dependent upon the range.

The 1934 drought materially reduced the livestock population in the Range Livestock regions. The extent of the reduction varied considerably as among different areas, depending on the acuteness of the feed shortage. With the return of more normal weather conditions, many cattlemen will need to replenish their breeding herds if they are to operate efficiently. This will be especially true for a large number of the producers in the Northern Great Plains, the Sandhills of Nebraska, and the Southwest Woodlands, Grasslands, and Semideserts, where unusually heavy liquidation was necessary. In view of the reduction of about 11 percent in the total cattle population of the country in 1934, and an even greater reduction in hogs, some increase is warranted from the standpoint of total beef and meat supplies. Hence from both angles—national supplies and good ranch management—the desired goal is a moderate expansion of livestock production in the region on the one hand, and prevention of overexpansion on the other.

RELATIONS BETWEEN RANGE COUNTRY AND CORN BELT

In analyzing the problems of the Range Livestock region, consideration should be given to the probable adjustments in agriculture in the Corn Belt, whence come a major part of the livestock products of the country. As indicated in the chapter of this report dealing with the Corn Belt, the major adjustment problem in that area from the standpoint of controlling livestock production and from the standpoint of soil conservation, is to keep the acreage of feed grains at a lower level than that which prevailed before 1934 and to attain this objective through a more extensive use of crop land. The question is, what would be the effects of a program of this character on livestock production in the Range Livestock region?

Controlling the acreage of feed grains would limit the amount of corn that would be available for cattle feeding, which in turn would

limit the tonnage of beef going into commercial channels. However, with hog production now at an abnormally low level, a feed-grain adjustment program during the next 2 years probably would not limit the amount of corn available for cattle feeding in the Corn Belt below the average quantity that was utilized for this purpose during the 5-year period 1925–29, provided weather conditions were about normal. As soon as hog numbers are readjusted, a feed-grain program would probably result in a smaller quantity of corn being available for cattle feeding.

The major portion of the land retired from feed-grain production would eventually be used for the production of hay and pasture, but it is unlikely that an increased hay and pasture acreage could be developed within the next 2 years, because of the wide-spread damage to meadows and pastures caused by drought. Over a longer period of time, Corn Belt adjustments probably would result in a somewhat larger production of grass cattle in the Corn Belt and a decreased production of grain-fed cattle. To what extent the former tendency would offset the latter in its effect on the total tonnage of beef contributed to the market supply by the Corn Belt cannot be determined; but at least it appears safe to assume that with such a program no larger quantity of beef would be produced in the area than without. The total quantity of meat produced, as distinct from beef, would be substantially smaller because of the effect of curtailed feed-grain production on the production of hogs.

The increase in cattle grazing in the Corn Belt probably would be brought about in part by some increase in breeding herds in the area, but it would also result from a larger in-shipment of stocker cattle from the Range Livestock region for grazing. Most of this increased outlet for range cattle would come in the spring and early autumn, and it would be advantageous chiefly to producers in the southern part of the Range Livestock region, where a substantial portion of the cattle sold are disposed of during that season of the year.

A more extensive use of land, both in the Corn Belt and in the Range Livestock region, would keep the production of beef at a lower level than would otherwise prevail, but, of the total number of cattle slaughtered a larger proportion would be finished on grass or on only a limited quantity of grain. This would increase the incentive for producers in the southwestern sections to produce grass-fat cattle of good quality for market in the spring of the year. In the Rocky Mountain and Northern Great Plains areas, where the bulk of the cattle are marketed as yearling and 2-year-old feeders during the fall months, the degree of finish would be of increased importance. Reducing the number of cattle carried on the range and improving the type and quality of cattle would aid materially in increasing the finish of grass cattle marketed from this area.

CHAPTER 10

THE MIXED FARMING REGIONS

Closely related to the General Farming regions previously discussed, are a number of distinct Mixed Farming regions. In these regions a large number of agricultural products are produced, but whereas in the General Farming regions several enterprises are found on the same farm, in the Mixed Farming regions there is a tendency toward specialization on particular farms.

Mixed Farming regions are located in the Willamette and Cowlitz Valleys of Washington and Oregon (1–A), the irrigated Valleys of the Rocky Mountain and Great Basin States (1–B), the Finger Lakes region of Western New York (1–D), the Flatwoods region along the Gulf and Atlantic coasts (1–E), and a series of miscellaneous areas around the principal cities (1–F). In addition to these, another region of considerable importance from the standpoint of area covered, though of less significance from the standpoint of total agricultural production, is a portion of the high plains region of Colorado and New Mexico (1–C). (See table 12.)

In the Willamette and Cowlitz Valleys the agriculture is a mixture of dairying, potatoes, small grain, general livestock, hay, hops, fruit, and poultry farming. The problems of adjustment differ according to the particular enterprises handled by the individual farmer. For the most part the milk, poultry products, potatoes, and truck crops are grown for local consumption in Portland, Oreg., and other cities of the area. For these products the problem is to keep the supply constantly adjusted to the varying demands of the local markets. For the staple products, such as grains, hay, and general livestock, the problem is much the same as for these products in other areas.

In the numerous irrigated valleys of the Mountain and Great Basin States a varied agriculture is practiced. In some of these valleys cash-grain farming predominates; in others, hay or potatoes; in others, vegetables and fruits; in others, dairy and poultry products; and in others, a combination of some or all of these products. In certain valleys production is gaged only to meet the demand of the local markets, whereas in others outside markets are also relied upon.

The problem of adjustment varies according to the situation. One common problem, however, is to insure an ample supply of water for irrigation; another is to keep down irrigation costs. Other problems

faced in certain cases are those of seepage and alkali. Alkali is a constant menace in certain areas. And the problem of adjusting the supply of products grown to the demands of both local and remote markets, is common to all.

In the Finger Lakes region of western New York, the agriculture in the main is a mixture of dairying and the production of beans, potatoes, cabbage, fruit, and poultry products. The problem of adjustment in this region is similar to that of other regions producing specialized crops—that is, keeping acreage and production in line with what the market will take at remunerative prices. Because of the nature of the demand for such products, the amount consumed is very sensitive to changes in business activity and consumer purchasing power; hence, if farmers are to maintain a favorable position they will want to be in a position to adjust supplies rapidly to changing demands. They will also want to make their adjustments in the light of what other competing areas are doing.

In the Flatwoods area adjacent to the Gulf and Atlantic coasts, there is a general mixture of potato, peanut, vegetable, and small-fruit growing, some cotton and tobacco culture, and the production of naval stores and other forest products. The problems of adjustment are much the same as those faced by producers of the same things in other regions. Much of the area is wet and marshy and is in timber.

The miscellaneous City areas comprise the semiagricultural or agricultural lands adjacent to all large cities. On most of these farms dairying, small-fruit and vegetable growing, and poultry and egg production constitute the major farm activities. The problem here is to keep acreage and production in line with the local demand, to guard against overcapitalized land values, and to keep expenses of production and distribution to a minimum. Attention should be given also to competition from more remote areas. It is especially desirable for producers to market fresh products of high quality at times when outside competition is at a minimum.

The adjustment problem of the High Plains area of Colorado and New Mexico (1–C) is of a somewhat different character. This area is one of low and uncertain rainfall and is beset with many of the same general problems faced by the dry-land wheat-farming region adjacent on the east. The farming is a mixture of cash grain, ripe field beans, dairy and poultry products, and range livestock. Denver and Colorado Springs, Colo., and the smaller mining communities furnish the principal markets for the more perishable foodstuffs. The low and uncertain rainfall makes the problem of reserves to tide over the inevitable drought years pressing. Land taken out of crops probably either should be summer-fallowed or permitted to revert to permanent pasture.

TABLE 12.—MIXED FARMING REGIONS: *Summary of agricultural statistics by 6 major regions, 1930*

Line	Item	Total for all mixed farming regions	Percent of United States total	Puget Sound, Willamette and Associated Valleys (*a*)	Intermountain Irrigated Valleys (*b*)				Colorado-New Mexico High Plains (*c*)	Finger Lakes (*d*)	Atlantic and Gulf Coast Flatwoods (*e*)	Miscellaneous City areas (*f*)	Line
					Total	Montana-Wyoming	Utah-Nevada	New Mexico-Arizona					
		Thousands of units, except dollars per capita											
1	Rural farm population—number	1,966	6	281	172	30	99	43	63	65	409	976	1
2	Value all farm products—dollars	809,449	7	127,824	102,416	25,403	64,922	12,091	33,178	35,112	78,259	432,660	2
3	Sales per capita—do	363	114	406	548	787	605	248	490	478	153	390	3
4	Number of farms—number	434	7	70	40	6	25	9	14	14	73	223	4
5	Land in farms—acres	58,945	6	5,528	10,384	3,151	4,969	2,264	13,504	1,628	6,533	21,368	5
6	Pasture land—total—do	25,227	6	3,008					11,611	502	1,526	8,580	6
7	Crop land—total—do	17,999	4	1,724	1,779	529	1,053	197	2,100	927	2,021	9,448	7
8	Crop land harvested—do	15,300	4	1,504	1,779	529	1,053	197	1,626	792	1,600	7,999	8
9	Corn acreage—do	3,424	4	66	34	2	8	24	407	59	729	2,129	9
10	Wheat acreage—do	1,872	3	193	166	39	101	26	377	93	57	986	10
11	Total hay acreage—do	5,182	8	587	1,185	334	757	94	195	302	233	2,680	11
12	Cotton acreage—do	443	1		11			11	9		202	221	12
13	Tobacco acreage—do	79	4								35	44	13
14	Potato acreage—do	267	9	32	21	7	12	2	3	27	37	147	14
15	Vegetables for sale—do	437	15	27	31	5	22	4	2	37	83	257	15
16	Fruits and nuts—do	629	10	148	30	5	18	7	2	48	72	329	16
17	Cattle on farms—number	4,096	6	524	594	136	347	111	497	143	352	1,985	17
18	Cows for milk—do	1,568	8	239	166	39	107	20	55	74	90	944	18
19	Whole milk sold—gallons	605,051	14	102,008	48,565	7,225	37,887	3,453	5,400	35,090	13,065	400,923	19
20	Butterfat sold—pounds	62,477	5	16,180	14,185	4,233	8,611	1,341	4,583	1,499	573	25,457	20
21	Cows for beef—number	455	6	23	95	18	44	33	160	2	87	89	21
22	Swine on farms—do	2,367	4	157	162	57	80	25	57	28	633	1,330	22
23	Chickens (over 3 months)—do	31,844	8	6,849	3,024	441	2,244	339	661	1,081	3,269	16,960	23
24	Sheep and lambs—do	2,357	4	765					471	176	127	818	24
		Per 100 acres farm land, except as indicated in stub											
25	Corn—bushels	103		12	6		2	22	30	40	180	202	25
26	Wheat—do	51		91	42	28	59	24	25	94	13	70	26
27	Whole milk sold—gallons	1,026		1,845	468	229	762	152	40	2,155	200	1,876	27
28	Butterfat sold—pounds	106		293	137	134	173	59	34	92	9	119	28
29	Swine—number	4		3	2	2	2	1	42	2	10	6	29
30	Chickens—do	54		124	29	14	45	15	5	66	50	79	30
31	Farm land in harvested crop land—percent	26		27	17	17	21	9	12	49	24	37	31
32	Plow land in hay and pasture—do	54		55	67	63	72	48	70	52	27	50	32

CHAPTER 11

THE FRUIT, TRUCK, AND SPECIAL CROPS REGIONS

A miscellaneous group of regions are designated on the map as Fruit and Mixed Farming, Series 2; Truck, Series 12; and Special Crops, Series 10. Although these regions and the various areas comprising them are widely scattered throughout the United States, they are here considered together, since many of their problems of adjustment are similar.

Two general problems are common to practically all areas producing Fruits, Truck, and Special Crops. The first is that of total supply. Continuous effort is necessary to keep the supply adjusted to the quantity which the market will take at prices that will result in a maximum income to producers. Although this problem is difficult in the case of any crop, it is particularly so in the case of tree fruits, where an oversupply may persist for several years as a result of an ill-advised, uncoordinated, or promotional development of new orchards in previous years.

The second problem has to do with the regulation of the seasonal movement to market. This is closely related to the regional distribution of production, to the perishability of the commodity, and to the relatively high ratio of the marketing and distributing costs of the commodity to its unit value.

Even with the most diligent attention to production planning, it is to be expected that both with annual crops and with tree fruits there will inevitably be years of heavy production and seasonal gluts when, if no control is maintained over supplies marketed, the growers will receive little or no income for their crops. In October and November 1934, for example, a considerable proportion of the Florida grapefruit sold on the New York and Chicago auction markets failed to bring enough to pay the actual cash outlays involved in harvesting and marketing the crop. In the face of such a situation, growers are interested first and foremost in finding some way to control the quantity and quality of fresh fruit marketed so that it will at least return more than the cost of harvesting and marketing. Along with this, it is just as important to find some means of reducing these costs, if it can be done.

In dealing with such problems, a marketing-agreement and license type of program appears to be the most feasible. Although in such

circumstances a marketing agreement may not retrieve all the losses resulting from previous mistakes in production planning, it frequently can serve to alleviate the distress incident to the ruinously low prices that often accompany uncontrolled marketing. To be continuously successful, a marketing agreement should include some provision for maintaining control over production. Although this admittedly is a difficult problem, it is not insuperable in the case of fruits, truck, and special crops.

These crops are centered in clearly defined, concentrated areas. They generally are produced by a small number of highly intelligent, specialized producers who are thoroughly familiar with the usual marketing and distributing channels and who have, often, already had years of experience upon which to build a successful cooperative undertaking.

Although these crops lend themselves in general to the marketing-agreement type of approach, their geographic distribution and the different conditions of production and marketing are such as to preclude a treatment common to all of them.

FRUIT AND MIXED-FARMING REGIONS

There are 12 clearly defined Fruit areas shown on the regionalized type of farming map. (See also table 13.) There are wide differences in the type and variety of fruits grown in these various areas as well as in the conditions under which they are produced and marketed. Some regions produce one type of fruit almost exclusively, while others produce several types. Apples, for example, predominate in the Pacific Northwest (2–A); apples, pears, apricots, peaches, prunes, grapes, almonds, and walnuts in California (2–B, 2–C, and 2–D); citrus fruit in the Southern California Valleys (2–E), in the Lower Rio Grande Valley of Texas (2–G), and in Florida (2–H); apples, peaches, pears, and cherries around the Great Lakes (2–I); apples and peaches in the Shenandoah-Cumberland-Albemarle subregion (2–J); peaches in Georgia (2–K); and miscellaneous berry and tree fruits in subregion 2–L.[6]

Some of the subregions are further characterized by the variety of fruit grown—some grow only one variety, others a different variety or several varieties of the same fruit. Growers of the same or different varieties may seek different market outlets. The clingstone peach in California, for example, is used for canning. The freestone peach, on the other hand, which is the dominant type in the East but is

[6] An additional Fruit and Mixed-Farming subregion (2–F) is shown on the regionalized map, and designated as the "Sierra Nevada-Coast Range Timberland and Grazing subregion." This is chiefly a range livestock area but the farming has been tabulated with the totals for California valleys and not listed separately.

also grown throughout the West, is used for dessert, drying, and home canning.

Subregions differ also with respect to accessibility to market, and with respect to the relative importance of fruit in the cropping system. Fruit is grown to the exclusion of all other enterprises in some areas, while in others it is more of a supplementary enterprise. All of these different characteristics give rise to different adjustment problems in the several regions.

Although, as has been pointed out, the fruit regions as a whole are concerned with the two general problems of adjusting annual supplies and regulating the seasonal movement to market, these problems weigh more heavily upon certain regions than upon others.

In the tree-fruit areas, for example, the immediate problem faced by the farmer is how to get the best possible income from existing orchards. He naturally is hesitant to destroy or neglect bearing trees even though the present or prospective demand for the product of these trees is considerably different from what it was expected to be when the orchard was planted.

In the tree-fruit areas in the Western States, growers depend largely upon outside markets. The fruit is shipped great distances and is subjected to high freight, refrigeration, and other distributing costs. Considerable attention has to be given to grading and packing. Such regions are vitally concerned both with the quality and quantity of fruit shipped and with the price obtained. Through cooperative effort they have long attempted to insure a high-quality product and to keep unmarketable surpluses off the market. The control of the actions of the noncooperator and of minor groups, however, has been a difficult problem. If, through a marketing-agreement and licensing program, such minority groups can be brought into line and the supply moving to market can be more effectively regulated, the growers have a greater assurance of avoiding the disastrous price slumps that are likely to attend unregulated market movements.

The producers of small fruits can adjust production to prospective demand more quickly than can the producers of tree fruits and nuts. The primary problem of the strawberry producer, for example, is to adjust the total acreage each year in the light of probable demand, and then to readjust the supply from this acreage either by diverting a part to unglutted markets or by withholding the poorer quality berries from the market.

TABLE 13.—FRUIT AND MIXED FARMING REGIONS: *Summary of agricultural statistics by 12 major subregions, 1930*

Line	Item	Total for Fruit and Mixed Farming Regions	Percent of United States total	Washington-Oregon Irrigated Valleys (a)	California Valleys					Lower Rio Grande Valley (g)	Florida Fruit (h)	Lake Michigan-Lake Ontario (i)	Shenandoah-Cumberland-Albermarle (j)	Georgia Peach (k)	Miscellaneous Berry and Fruit Tree (l)	Line
					Total	St. Helena, Santa Cruz, and Santa Clara (b)	Great Valley of California (c)	Salinas River (d)	Southern California (e)							
		Thousands of units, except dollars per capita														
1	Rural farm population—number	1,351	4	73	470	87	239	23	121	50	59	146	138	130	285	1
2	Value of all farm products—dollars	847,997	8	63,956	504,673	84,783	206,119	25,056	188,715	18,632	33,177	62,478	49,082	20,801	95,198	2
3	Sales per capita—do	591	185	845	1,049	941	837	1,086	1,542	352	536	376	297	133	288	3
4	Number of farms—number	295	5	16	113	21	51	4	37	88	17	33	26	21	61	4
5	Land in farms—acres	42,668	4	2,843	23,422	4,011	12,527	2,772	4,112	942	1,098	2,575	2,956	2,232	6,600	5
6	Pasture land—total—do	21,926	5	1,824	15,736	2,815	8,600	2,034	2,287	520	412	660	899	504	1,371	6
7	Crop land—total—do	13,885	3	812	6,157	775	3,435	560	1,387	392	338	1,592	1,277	1,103	2,214	7
8	Crop land harvested—do	11,150	3	571	4,761	671	2,627	383	1,080	346	275	1,307	1,135	823	1,932	8
9	Corn acreage—do	1,306	1	13	66	8	40	4	14	26	37	159	289	325	391	9
10	Wheat acreage—do	1,262	2	173	446	34	302	83	27			126	298	12	207	10
11	Total hay acreage—do	2,898	4	218	1,244	179	630	114	321	1	5	394	278	28	730	11
12	Cotton acreage—do	962	2		274		253		21	247				318	123	12
13	Vegetables for sale—do	431	15	6	236	37	80	42	77	46	22	58	9	18	36	13
14	Fruits and nuts—do	2,432	40	115	1,415	312	703	27	373	59	204	274	146	76	143	14
15	Apple trees (bearing age)—number	20,411	23	4,083	2,670	1,817	265	205	383			4,832	4,757	63	4,006	15
16	Peach trees (bearing age)—do	17,220	29	429	7,407	477	5,978	33	919		14	2,185	1,133	5,018	1,034	16
17	Grapevines (bearing age)—do	251,743	74	632	230,566	29,614	183,879	444	16,629	6	197	15,629	88	13	4,612	17
18	Cattle on farms—do	2,842	4	136	1,558	212	876	166	304	61	107	204	192	64	520	18
19	Cows for milk—do	900	4	41	420	62	230	39	89	11	17	100	91	29	191	19
20	Whole milk sold—gallons	349,226	8	5,522	244,621	21,003	133,737	16,112	73,769	1,629	5,304	28,995	30,492	3,043	29,620	20
21	Butterfat sold—pounds	47,902	4	5,794	19,658	5,382	9,789	3,087	1,400	144	16	5,516	1,203	253	15,318	21
22	Cows for beef—number	366	5	16	249	29	157	29	34	18	33	3	4	3	40	22
23	Swine on April 1—do	1,090	2	46	432	48	188	28	168	5	54	70	170	72	241	23
24	Chickens (over 3 months)—do	24,033	6	554	15,301	5,675	3,248	515	5,863	222	545	2,089	1,971	424	2,927	24
25	Sheep and lambs—do	3,356	6	604	2,380	737	1,378	65	200	4	4	131	182	2	49	25
		Per 100 acres farm land, except as indicated in stub														
26	Apple trees (bearing age)—number	48		144	11	45	2	7	9			188	161	3	61	26
27	Peach trees (bearing age)—do	40		15	32	12	48	1	22		1	85	38	225	16	27
28	Grapevines (bearing age)—do	590		22	984	738	1,468	16	404	1	18	607	3	1	70	28
29	Berries and small fruits—acres											1			1	29
30	Dairy cattle—number	2		1	2	2	2	1	2	1	1	4	3	1	3	30
31	Farm land in harv. crop land—%	26		20	20	17	21	14	26	37	25	51	38	37	29	31
32	Plow land in hay and pasture—do	44		47	49	56	49	52	44	9	13	42	47	17	36	32

TRUCK REGIONS

Although vegetables are grown throughout the United States, commercial truck production is especially important in California, Southern Texas, Florida, and along the Atlantic coast. (See table 14)

Truck crops are grown under irrigation in the Southwest (12-A). Asparagus, cantaloupes, lettuce, and green peas are especially important in the Imperial Valley in California, and onions and spinach are the chief crops in the Winter Garden region of Texas. Almost all kinds of early vegetables are produced in the Southeastern Truck regions (12-B). String beans, green peas, cabbage, and tomatoes are especially important in the small sub-region in southwestern Mississippi; and string beans, celery, cucumbers, peppers, sweet corn, tomatoes, and watermelons are the chief truck crops in Florida.

TABLE 14.—TRUCK REGIONS: *Summary of agricultural statistics by 3 major subregions, 1930*

Line	Item	Total for Truck regions	Percent of United States total	Imperial Valley and Winter Garden of Texas (a)	Southeastern Truck (b)	Baltimore-Philadelphia-New Jersey (c)
		Thousands of units, except dollars per capita				
1	Rural farm population—number	243	1	25	113	105
2	Value all farm products—dollars	143,297	1	31,455	44,920	66,922
3	Sales per capita—do	554	174	1,251	369	589
4	Number of farms—number	47	1	3	24	20
5	Land in farms—acres	3,591	(1)	519	1,707	1,365
6	Pasture land—total—do	677	(1)		444	233
7	Crop land—total—do	1,813	(1)	305	713	795
8	Crop land harvested—do	1,502	(1)	305	556	641
9	Corn acreage—do	355	(1)	2	210	143
10	Wheat acreage—do	58	(1)	7	1	50
11	Total hay acreage—do	309	(1)	118	36	155
12	Total hay production—tons	602	1	330	45	227
13	Potato acreage—acres	59	2		20	39
14	Vegetables for sale—do	353	12	93	120	140
15	Fruit and nuts—do	132	2	12	72	48
16	Cattle on farms—number	341	1	63	168	110
17	Cows for milk—do	123	1	27	33	63
18	Milk produced—gallons	74,788	1	17,092	14,055	43,641
19	Cows for beef—number	54	1	3	50	1
20	Swine on farms—do	251	(1)	35	136	80
21	Chickens (over 3 months)—do	3,407	1	236	758	2,413
22	Sheep and lambs—do	28	(1)		18	10
23	Farm land in harvest crop land—percent	42		59	33	47
24	Plow land in hay and pasture—do	33		39	25	38

[1] Less than 1 percent.

Commercial truck crops are also especially important in a small area around Baltimore and Philadelphia (12-C), and in all of the Miscellaneous City areas classified under Mixed Farming (1-F). The vegetables grown in these areas follow the early vegetables from the South and Southwest on the markets, and are usually trucked to market.

The specific adjustment problems in each truck-crop region, or for each crop, are usually peculiar to the region or crop in question.

In certain areas production is highly specialized, while in others almost all kinds of vegetables are produced. Four crops accounted for 90 percent of the truck-crop acreage in the Imperial Valley in 1929, for example; while almost all kinds of vegetables are grown in considerable quantity in the Baltimore-Philadelphia-New Jersey region. Some areas produce vegetables for canning almost exclusively. Since canning vegetables are usually produced under contract, the marketing problems in the canning areas are quite different from those in areas or regions where fresh vegetables are produced for local sale or shipment. Other differences are associated with the distances of the several areas from their markets, the season or seasons in which the several vegetables are marketed, and the place of the truck crops in the systems of farming in each region.

As already indicated, however, there are two general problems with which each region is faced. The first of these has to do with the adjustment of the total truck-crop acreage, and of the acreage devoted to each crop, to the prospective market demand; and the second has to do with the regulation of the volume and seasonal distribution of the market movement. Marketing agreements seem to offer the best approach to the marketing problem.

Differences in the maturity dates of vegetables grown in different regions and the wide geographic distribution of truck-crop production are both closely related to the marketing problem. Truck crops begin to move from the South and Southwest into the northeastern markets in January, and they must bring a relatively high price in order to cover the relatively high costs of production, marketing, and transportation. As the season advances, other areas begin shipping and prices are gradually lowered as the harvesting season moves north and local producers enter the market. In some specialized areas, the whole crop may be harvested and marketed in less than a month.

As a result, producers in the specialized truck regions need to consider not only what they themselves are producing and marketing but also the competition they may expect at the time when their product is to be marketed. Even where acreages are properly adjusted to the usual seasonal movement, a late season in an area producing an early vegetable or a very favorable yield may delay or extend shipments from the area in question until it runs into the usual shipping period or periods of other areas producing the same crop. This may cause an excessive piling up of supplies through the middle or latter part of the season.

The general problem of market grades is also important. Market prices for the better grades may be forced to a very low level by excessive competition from low-grade vegetables that are locally

produced, trucked to market, and sold for any price that can be obtained. Such situations might be made the basis for marketing agreements that would designate the quality of the products to be sold, whether they come from local areas or from a distance.

SPECIAL CROPS

Areas in which certain special crops are dominant are scattered throughout the United States. As indicated in table 15, the special crops are ripe field and other dried beans, sugar beets and sugarcane, potatoes, rice, and peanuts. The areas producing these crops constitute the 10-series on the map.

RIPE FIELD AND OTHER DRIED BEANS

The chief problem confronting the producers of ripe field and other dried beans is the adjustment of the total supply and the supply of the several varieties, to the effective demand in the domestic market. The export movement is usually small, and imports have been equally small since 1931.

Ripe field beans are usually produced under dry-farming conditions in New Mexico, southern Idaho, along the Yellowstone River in Montana, in the Big Horn Basin in Wyoming, and in California. Beans are also an important crop in western New York and in the Saginaw Valley in Michigan.

Beans are the most important crop in the Estancia Valley in New Mexico (10–A in New Mexico) and in the Twin Falls and Blackfoot-Idaho Falls area in Idaho (10–A in Idaho). From the standpoint of total production, however, some of the other States are more important than either New Mexico or Idaho.

The Lima, Baby Lima, and colored varieties of beans are produced in California; the Great Northern in Idaho; the Pinto in Colorado and New Mexico; and the small white pea bean in Michigan and New York. The demand is distinct for some of the various types, so that the problems confronting different areas are somewhat different.

SUGAR CROPS

Sugar beets and sugarcane are both grown in the United States. Sugar beets are grown in an area north of a line connecting Toledo, Ohio, and San Diego, Calif., while sugarcane is grown almost exclusively in lower Louisiana (10–C). Sugar beets are an important crop in Colorado (the leading State), Nebraska, Utah, Idaho, California, Montana, Wyoming, Minnesota, Michigan, and Ohio (10–B).

The area suited to sugarcane production is rather limited. Some sugarcane is produced on large commercial plantations, but the bulk of the crop is produced on the smaller farms. In the beet areas,

conditions of production differ considerably. In the East, sugar beets are produced on the general farm, with ordinary farm labor used to a considerable extent, sometimes supplemented by transient labor for harvesting. In the West, sugar beets are grown under irrigation, and most of the work is usually done by labor hired especially for this crop.

The distribution of marketing quotas between domestic, insular, and foreign production, and the further allocation of the domestic supply between beet and cane production is an especially difficult problem. Its solution involves matters of National policy in foreign trade, in the treatment of insular possessions, and in the regional distribution of and shifts in production. Associated with this is the problem of distribution of tonnage allotments to manufacturers, since this tonnage has to be translated into terms of acreage in particular areas, and the acreage allotted to growers.

Some domestic producers responded to very low sugar prices by voluntary acreage adjustment some years ago. With a price-supporting program, both growers and refining plants now out of production are factors that should be considered. New producers will doubtless be tempted into production by higher sugar-beet prices, and add to the problem of adjustment. On the other hand, farmers in some areas have apparently found alternative crops better than beets and do not wish to continue production on a level equal to that maintained during the recent past.

WHITE POTATOES

The fundamental problem in potato adjustment is two-fold. First, some method of effectively controlling the total acreage and stabilizing the volume of marketings is needed; and second, the desired production must be properly distributed among the several areas or regions concerned. The regional problem is especially important since maturity dates differ as among regions and since potatoes are so bulky in relation to their value that transportation costs are relatively high.

The potato regions can be classified as early, intermediate, and late, according to the maturity date in each. For the period 1930–34, about 10 percent of the potatoes were produced in the early regions, about 10 percent in the intermediate regions, and the remaining 80 percent in the late regions. Although marketing agreements might be used to control or direct the market movement, acreage adjustment would seem desirable, especially in the early and intermediate regions, so that the cash costs for seed, soil preparation, fertilizer, and care and harvesting of the crop on the unneeded acreage could be avoided.

TABLE 15.—SPECIAL CROPS REGIONS: *Summary of agricultural statistics by 6 major subregions, 1930*

Line	Item	Total for Special Crops region	Percent of United States total	Ripe field beans (a)	Sugar crops			Potatoes (d)	Rice (e)	Peanuts (f)	Line
					Total	Sugar beets (b)	Sugar-cane (c)				
		Thousands of units, except dollars per capita									
1	Rural farm population—number	1,022	3	39	362	266	96	397	199	25	1
2	Value all farm products—dollars	532,968	5	35,104	173,320	156,884	16,436	227,818	91,589	5,137	2
3	Sales per capita—do	478	150	864	443	548	154	518	428	163	3
4	Number of farms—number	197	3	8	62	53	9	83	40	4	4
5	Land in farms—acres	34,019	3	2,039	11,202	10,020	1,182	13,115	7,171	492	5
6	Pasture land—total—do	10,117	2	1,063	1,140	918	222	3,923	3,913	78	6
7	Crop land—total—do	14,494	4	550	4,165	3,572	593	6,663	2,936	182	7
8	Crop land harvested—do	12,498	4	540	3,814	3,356	457	5,755	2,248	142	8
9	Corn acreage—do	1,401	2	16	559	366	193	530	243	53	9
10	Wheat acreage—do	1,372	2	102	349	349		787	132	2	10
11	Total hay acreage—do	3,357	5	181	1,123	1,078	45	1,840	144	66	11
12	Rice acreage—do	606	82		20		20		586		12
13	Cotton acreage—do	527	1		30		30		488	9	13
14	Sugarcane acreage—do	170	87		159		159		11		14
15	Sugar beet acreage—do	404	63	13	347	347		35	9		15
16	Peanuts (alone)—do	64	4						1	63	16
17	Peanuts (with other crops)—do	3	(1)					1		2	17
18	Field beans (alone)—do	87	33		5	5		80	2		18
19	Field beans (with other crops)—do	3	9		1			2			19
20	Potato acreage—do	724	25	21	78	66	12	617	7	1	20
21	Vegetables for sale—do	157	6	1	65	50	15	74	16	1	21
22	Fruits and nuts—do	236	4	5	36	35	1	52	141	2	22
23	Cattle on farms—number	2,380	4	91	835	776	59	851	594	9	23
24	Cows for milk—do	755	4	30	290	273	17	335	95	5	24
25	Milk produced—gallons	433,344	4	19,974	167,552	163,146	4,406	202,421	41,546	1,851	25
26	Cows for beef—number	353	5	8	83	70	13	64	198		26
27	Swine on Apr. 1—do	1,156	2	50	444	396	48	342	271	49	27
28	Chickens (over 3 months)—do	12,191	3	391	4,893	4,438	455	4,686	2,038	183	28
29	Sheep and lambs—do	2,041	4	76	258	252	6	601	1,101	3	29
30	Farm land in harvested crop land—percent	37		26	34	33	39	44	31	29	30
31	Harvested crop land in sugar beets—do	3		2	9	10		1			31
32	Plow land in hay and pasture—do	42		58	37	39	24	42	44	53	32

[1] Less than 1 percent.

Early potatoes are harvested and shipped from the Southern States from early in January until the movement of the intermediate potatoes is under way from New Jersey, the Eastern Shore of Virginia and Maryland, Kentucky, Missouri, and Kansas. Commercial supplies of late potatoes come predominantly from the region that lies northeast of a line from Baltimore, Md., to Fargo, N. Dak. Within this region (10–D) the outstanding potato areas are in Aroostook County, Me.; Long Island; a part of eastern Pennsylvania; western Michigan; central Wisconsin; eastern Minnesota; and the Red River Valley of Minnesota and North Dakota. Almost all of the last part of the crop harvested is stored and held into the late winter, spring, and early summer.

Southern Colorado and southeastern Idaho are important areas outside the major northeastern section of the United States. Baking potatoes from Idaho are widely distributed. Potatoes are also an important crop in the Great Valley of California (2–C), and in the mixed-farming areas of Oregon and Washington (1–A).

RICE

Rice is produced in three general areas (10–E); in east central Arkansas, along the Gulf coast in southwestern Louisiana and southern Texas, and in the Sacramento Valley of California. One characteristic of all these areas is their extremely level topography. This is necessary for the irrigation of the crop. In the Texas-Louisiana district the irrigation is done largely by pumping either from bayous or deep wells. The California District is of most recent origin. The crop is grown chiefly in the Sacramento Valley on the adobe soils of this district, being irrigated mainly from the Sacramento and Feather Rivers.

Rice production since the World War has fluctuated between 1,000,000,000 and 1,500,000,000 pounds and at present it is about 1,250,000,000 pounds. Approximately 80 percent of the crop is produced in the southern areas. In these areas medium and long varieties are chiefly grown, while in California the short-grained rice is produced exclusively.

From 1926 to 1932 the United States exported from 20 to 25 percent of its total production of milled rice. During this same period about the same or even a higher percentage of the continental production was shipped to our insular possessions, notably Hawaii and Puerto Rico. Beginning in 1932 exports declined by almost 50 percent, but shipments to Puerto Rico and Hawaii were maintained at the previous level or even increased. The decline in exports was felt most keenly by the southern rice producers. Although as much as 20 percent of the total production of southern rice had

once found a market outside of the United States, now only 10 to 12 percent is marketed abroad.

This decline in exports has been accompanied by an increase in stocks. Stocks of southern rice increased from an average of 75,000,000 to 80,000,000 pounds in the period 1926–32 to roughly 140,000,000 pounds in the period 1932–34. During the same period stocks of California rice remained practically constant, fluctuating between 40,000,000 and 45,000,000 pounds. Before 1927 California exported varying quantities to Japan. This market was lost when Japan became more nearly self-sufficient and California adjusted her production until markets in United States insular possessions could be developed to compensate for the loss of the Japanese market. In late years production has been maintained at a level equal to that of 10 years ago and stocks have remained constant or have decreased slightly. Approximately three-fourths of the California rice is sold to Puerto Rico and Hawaii and most of the remainder to West Coast Orientals. Inasmuch as the decline in export markets has been felt most keenly by the southern rice producers and since the major increase in stocks has been in this type of rice, it would appear that the southern rice producers face a more serious problem of adjustment than do the growers in California.

PEANUTS

Peanuts are widely grown throughout the Coastal Plain area of the Southeastern States, where growing conditions and light soils favor economical production of this crop. An area in southeastern Virginia (10–F) specializes in growing the Virginia type, which is used largely for human consumption. This type is grown almost exclusively in Virginia and North Carolina. As a result, the largest commercial shellers are located in Suffolk and Norfolk. The Spanish or Runner type of peanuts is grown chiefly for hog feed and for conversion into oil and peanut butter. A concentration of production for such purposes is found in the cotton subregion (8–P) in southern Georgia and Alabama.

Commercial production of both types may easily be overexpanded, and the chief problem facing peanut producers is the adjustment of the supply moving to the shellers for human consumption and to crushers for oil. Some expansion on favorable soils may be possible, however, in the production of peanuts for hay and feed to supplement carbohydrate feeds for livestock. Such production would be primarily for home consumption.

CHAPTER 12

SELF-SUFFICING FARMING AND THE SUBMARGINAL-LAND PROBLEM [7]

Self-sufficing farming, which according to the Census of 1930 is that type of farming in which at least 50 percent of the farm products are used on the farm where they are produced, is concentrated in the Southern Appalachian region and in the Ozark-Ouachita Region. Self-sufficing farming, however, is found to some extent in every section of the United States.

Since such farming is closely associated with the submarginal-land problem, it is well to begin a consideration of self-sufficing farming with a general view of the areas where it appears desirable to encourage permanent retirement of a substantial part of the arable farm land, or where consolidation of small farms is recommended. In general, there are three classes of areas that should be dealt with:

(1) Areas where the land is so poor or so badly eroded and depleted that it offers only a bare subsistence to those who cultivate it, and where its permanent retirement from cultivation should be encouraged. Such areas are usually located in mountain regions or in cut-over forest regions where small acreages of land on sloping hillsides and along narrow valleys are cultivated, and where a minimum number of livestock are kept. Such areas should gradually be returned to forest, or set aside for recreational uses if they are near large centers of population.

(2) Areas where the land is good enough to return a yield worth while in years of plentiful rainfall, but where the rainfall is so variable and drought so frequent that field-crop production over any considerable period is very uncertain. Such areas are for the most part located along the western edge of the wheat regions and should be allowed to revert to grazing land.

(3) Areas where the soil is sufficiently good to allow a reasonable standard of living to be maintained, provided existing small holdings are consolidated and soil erosion is halted. Such areas are found intermixed with the submarginal areas just described, around the edge of the corn-and-wheat producing region in the Midwest, and throughout the range regions of the West.

[7] The discussion in this section is based in part on: Maladjustments in Land Use and in the Relation of Population to Land, and Proposed Lines of Action, Section III of the Report of the Land Planning Committee of the National Resources Board, Released in January 1935.

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A HUMAN AS MUCH AS A LAND PROBLEM

It should be made clear at the outset that the so-called "submarginal land problem" is essentially a human problem rather than a land problem, and also that good land and submarginal land are often so intermixed that the acreage which should be retired from cultivation in any given area may range all the way from 20 to 100 percent of the total farm land.

The first step in attacking the situation should be to obtain a clear-cut description or definition of the land within each general area that is actually submarginal or is so farmed that consolidation is desirable, as well as the land that may be considered and treated as good farm land. Very small acreages of good land widely scattered through an area where submarginal land is predominant should of course be classed with the submarginal land, for widely scattered settlements cannot well be supplied with schools, roads, and other grants-in-aid at a reasonable cost, and sparse settlement is not usually associated with an adequate standard of living for the people concerned.

After the specific areas or subareas where retirement or consolidation is to be recommended are located, the next step is to work out an action program and put it into effect. Further settlement in these areas should be discouraged, and some method sought to secure State or Federal control of the land. In addition, people moved from the land should be offered a chance of earning a livelihood that would give them an adequate standard of living in some other section.

Four classes of families might be distinguished. First, there are those who would be able to find work on the land itself in such forests, recreational parks, or game preserves as might be established. Second, there are those who, with the aid of the modest sum received for their land, might move to a farm in some better section, or who might move to town and obtain industrial employment. Third, there are those who would need active help and who would have to be supplied with funds and guidance for rehabilitation by the Relief Administration. And finally, there are those who would be willing to sell their land provided they were allowed to remain on it until their death. Methods would need to be devised to meet the problem of each of these four classes.

A DEMONSTRATION PROGRAM FOR SUBMARGINAL LAND

At present, a demonstration submarginal-land program, directed by the Federal Government, is being financed by a $25,000,000 grant from the Public Works Administration and a $12,500,000 grant from the Drought Relief Fund. Should this demonstration program be successful, a wide attack along the same front might well be de-

veloped. According to the Land Use Committee of the National Resources Board, an estimated average annual appropriation of about $45,000,000 would be needed over a 15-year period if the submarginal land problem were to be successfully solved by Government acquisition. A start has also been made on the western range problem with provisions included in the Taylor Act for permanent withdrawal of approximately one-half of the remaining public domain from the operation of the homestead act, and for the establishment of grazing reserves on the land withdrawn.

A method of encouraging the consolidation of small farms in the areas where such consolidation is desired would also need to be developed.

SUPPLIES NOT ADJUSTED THROUGH RETIREMENT OF SUBMARGINAL LAND

The question is often raised as to the extent to which desired adjustments in commercial production might be obtained through eliminating submarginal land or submarginal farming from the agricultural system. Only a very small downward adjustment could be obtained through the retirement of submarginal land. According to the National Resources Board, there are about 450,000 farms that should be retired from cultivation. Aside from the 15-year period required, the retirement of these farms would involve the retirement of only about 15,000,000 acres of low-grade harvested crop land, or at most the retirement of the equivalent of about 10,000,000 acres of average crop land. Some additional acreage should also be retired through consolidation. The reduction, in turn, would be offset in part by the land brought into cultivation elsewhere by the farmers moved from the submarginal areas, or by the increased production of land already in cultivation.

THE DISTRIBUTION OF SELF-SUFFICING FARMING

As already noted, self-sufficing farming is concentrated in the Southern Appalachian region and the Ozark-Ouachita region. A study of the contribution of these regions to the agricultural production of the Nation as given in the second column of table 16 is worth while. The 4 percent of the population in the Self-sufficing regions accounted for only 1 percent of the total value of all agricultural production, and the average cash sales per capita of farm population were only $64, or 20 percent of the average for the Nation in 1929. The 4 percent of the farms in the Self-sufficing regions account for only 1 percent of the harvested crop land and 1 percent of the livestock.

The Southern Appalachian region (9–A) is composed of the Blue Ridge, the Great Smoky, and the Cumberland Mountains, and the Allegheny Plateau. A general type of farming is practiced, and the adjustments needed are a gradual and wide-spread withdrawal of much of the arable farm land from cultivation and its conversion to forest; consolidation of farms in some of the areas where the slopes are not so steep as to prevent erosion control, and where an increased acreage of pasture can be obtained; and attention to erosion control in the areas where the farm land is good enough to be retained in cultivation under the present organization.

TABLE 16.—SELF-SUFFICING FARMING: *Summary of agricultural statistics by 2 major subregions, 1930*

Line	Item	Total for all Self-sufficing Farming	Percent of United States total	Southern Appalachian subregion (a)			Ozark-Ouachita Mountains (b)
				Total	Blue Ridge–Great Smoky Mountains	Cumberland Mountains and Allegheny Plateau	
		Thousands of units, except dollars per capita					
1	Rural farm population—number	1,178	4	955	172	783	223
2	Value all farm products—dollars	134,563	1	102,377	18,029	84,348	32,186
3	Sales per capita—do	64	20	55	56	55	102
4	Number of farms—number	219	4	174	30	144	45
5	Land in farms—acres	17,388	2	13,612	2,504	11,108	3,776
6	Pasture land, total—do	5,022	1	3,949	655	3,294	1,073
7	Crop land, total—do	5,510	1	3,979	605	3,374	1,531
8	Crop land, harvested—do	4,140	1	2,902	450	2,452	1,238
9	Corn, acreage—do	2,161	2	1,660	244	1,417	501
10	Corn, grain production—bushels	38,856	2	32,659	4,557	28,102	6,197
11	Wheat, acreage—acres	101	(1)	100	51	49	1
12	Total hay, acreage—do	735	1	620	62	558	115
13	Cotton, acreage—do	524	1	22	10	12	502
14	Cotton, production—bales	144	1	9	4	5	135
15	Tobacco, acreage—acres	43	2	43	2	41	
16	Vegetables for sale—do	17	1	12	3	9	5
17	Fruits and nuts—do	179	3	147	41	106	32
18	Cattle on farms—number	812	1	581	107	474	231
19	Cows for milk—do	338	2	249	48	201	89
20	Milk produced—gallons	138,227	1	106,092	20,957	85,135	32,135
21	Cows for beef—number	30	(1)	18	2	16	12
22	Swine on Apr. 1—do	653	1	514	68	446	139
23	Chickens over 3 months—do	7,162	2	5,733	885	4,848	1,429
24	Sheep and lambs—do	375	1	360	41	319	15
		Per 100 acres farm land, except as indicated in stub					
25	Corn—bushels	224		240	182	253	164
26	Dairy cows—number	2		2	2	2	2
27	Beef cattle—do			2			
28	Swine—do	4		4	3	4	4
29	Chickens—do	41		42	35	44	39
30	Farm land in harvested crop land—percent	24		21	18	22	33
31	Harvested crop land in feed grains—percent	51		56	54	56	39
32	Plow land in hay and pasture—do	46		53	46	54	26

[1] Less than 1 percent.

The situation in the Ozark and the Ouachita Mountain subregions (9–B)—with the exception that cotton is an important crop in the Ouachita subregion—is similar to the situation in the Southern Appalachian region.

Other self-sufficing areas are found throughout the Northeastern Dairy region, especially in the southern subsection of the New York Milkshed; in the Tobacco and General Farming Belt; in the Eastern Cotton Belt; and in the cut-over forest areas of the northern subsection of the Lake States Dairy region, the Atlantic and Gulf coast Flatwoods region, and the Pacific Northwest.

Submarginal areas, where submarginal cash-crops rather than self-sufficing farming is found, are scattered throughout the Western Great Plains region. Here a considerable acreage of land has been brought under cultivation that will eventually have to revert to grazing land. Such areas are also found in the foothills bordering the Great Valley in California, in the Columbia River Basin, and scattered throughout the irrigated valleys and the small dry farming sections of the arid and semiarid West.

In certain areas special attention should be given to erosion control, and there might be an upward adjustment in the average size of the farms concerned so as to permit an increased acreage of hay and pasture relative to other crops and an increased income per farm. Such areas are found throughout the western wheat-producing sections of the Great Plains region, the western and southern Corn Belt and the closely associated General Farming region, and the Cotton Belt. Consolidation, or an upward adjustment in the size of the ranches involved, might also be encouraged in some of the areas in the West where the land is severely over-grazed.

CHAPTER 13

DEVELOPING A REGIONAL ADJUSTMENT PROGRAM

For the most part, this discussion has been concerned with the regional distribution of the agricultural production of the United States and with the adjustment problem in each broad agricultural region.

It has been pointed out that the farmers in each major agricultural region are faced with an adjustment situation that is either peculiar to, or centered in, the region in question. Farmers in the Corn Belt are interested in balancing feed-grain production in relation to livestock production. Farmers in the Wheat regions are faced with an excess acreage of wheat, even assuming a considerable recovery in the export market. Farmers in the Cotton Belt have the problem of deciding between curtailed production of cotton or a much lower level of cotton prices as a means of contributing a greater share of the supply of cotton to world markets. Farmers in the Tobacco, Dairy, Special Crops, and Range Livestock regions are faced with problems that are centered in their own particular region or subregion. In addition, soil erosion is a general problem, and farmers in the Self-Sufficing regions should be vitally interested in the whole problem of reorganizing their social structure and retiring submarginal land from production.

It has also been pointed out, however, that each major agricultural region can itself be divided into a series of subregions, and that the agricultural characteristics of these subregions are different. Although farmers in each subregion are interested in the same general problem, it is not possible to develop a single or over-all adjustment approach which will obtain the average adjustment desired while at the same time will take into account the differences between the several subregions. Such differences are essential parts of the picture.

EXAMPLES OF THE MANY QUESTIONS INVOLVED

For example, the question arises: To what extent do Cotton Belt farmers want a program specifically adapted to each subregion in the Cotton Belt in view of the wide differences among them? Should the adjustments required in cotton acreage and the regulations with

respect to the use of other land be differentiated for such subregions as the Southwestern Irrigated Valleys, the Large-Scale Farming country, the Mississippi and Red River Deltas, and the Clay Hills and Rolling Uplands of the Eastern Cotton Belt?

Similar questions are faced for each of the other major regions. Do wheat farmers want the same adjustments applied to the several classes of wheat? Is it advisable to have the same contract and regulations apply to farmers in the Cash-Grain subregions of the Corn Belt as in the Southern Pasture and Feeding subregion? Is exactly the same type of milk-marketing agreement suitable for the Boston milkshed as for the St. Paul-Minneapolis milkshed? Do tobacco growers desire adjustments and forms of contract for each of the several types of tobacco, or for the different grades of the same type? And with respect to submarginal land, which areas should be permanently retired from production and converted to forest or allowed to revert to grazing land, and in which areas should the consolidation of small farms be encouraged?

These are some of the questions that are now pressing for consideration and evaluation. Although intraregional differences have already been recognized and provided for to some extent in the adjustment programs now in effect, exploration of the possibilities in this direction has only begun. No more than a small beginning has been made in regional and intraregional planning with all its details and complexities.

Such considerations lead directly to the question of how regional and intraregional planning might be developed and coordinated, and how the work involved might be divided between the farmers and State and Federal agencies.

THE HELP OF BOTH FARMERS AND STATE WORKERS IS NEEDED

The reason for recognizing regional and subregional differences in developing an agricultural-adjustment program is to obtain a closer coordination between the adjustments and shifts in farming that are desirable from the national point of view on the one hand and from the individual or farm-management point of view on the other. Federal workers are in a position to help farmers determine the national acreage, production, or volume of marketings needed, but much of the regional planning and local adaptation in connection with any adjustment program can best be done by State workers and farmers themselves, with the aid of the Agricultural Adjustment Administration as a coordinating agency.

The services of the State Experiment Station and Extension Service workers are especially needed in connection with subregional or

intraregional planning. Federal workers can determine the *general* boundaries and the statistical characteristics of the several regions and subregions. But the *exact* determination of the boundaries of each subregion and—what is far more important—a clear understanding of the actual conditions of production and the adjustment problems in each small area or subregion can best be supplied by the State agricultural workers who are in direct contact with the regions and subregions in question.

Finally, farmers themselves should assume a greater share of the responsibilities of program planning and administration in order that a continuing agricultural-adjustment program may be successfully achieved. Farmers should approve each program before it is put into effect. And it will be up to farmers, working through their county associations, to see to it that the actual situation in each subregion and on each individual farm is given as much recognition as is possible under the general rules laid down to assure the desired adjustments in agricultural production.

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